

500	505	510
Leu Glu Leu Asp Asn Leu Ile Glu Val Ala Lys Ala Thr Leu Val Ser		
515	520	525
Ala Glu Ala Arg Lys Glu Ser Arg Gly Ala His Ala Ser Asp Asp His		
530	535	540
Pro Glu Arg Asp Asp Glu Asn Trp Met Lys His Thr Leu Tyr His Ser		
545	550	555
Asp Ile Asn Thr Leu Ser Tyr Lys Pro Val His Thr Lys Pro Leu Ser		
565	570	575
Val Glu Tyr Ile Lys Pro Ala Lys Arg Val Tyr		
580	585	

<210> 71
 <211> 1764
 <212> DNA
 <213> Neisseria meningitidis

<220>
 <221> misc_feature
 <222> (67)
 <223> N is any nucleotide

<220>
 <221> misc_feature
 <222> (408)
 <223> N is any nucleotide

<400> 71
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 cgcgcanccc tccaattatc caaatccggt ctgaattgtg ccgttttgtc taaagtgttc 120
 ccgacccgtt cgcataccgt agcggcgcag ggcggtatct ccgcctctct gggtaatgtg 180
 caggaagacc gttgggactg gcacatgtac gataccgtga aaggttccga ctggttgggc 240
 gaccaagatg cgattgagtt tatgtgccgc gccgcgcctg aagccgtaat tgagttggaa 300
 cacatgggta tgccttttga ccgtgtggaa agcggtaaaa tttatcagcg tcctttcggc 360
 ggccatactg ccgaacacgg taaacgcgcg gtagaacgcg cctgtgcngt tgccgaccgt 420
 acaggtcatt cgatgctgca tactttgtac caacaaaatg tccgtgccaa tacgcaattc 480
 tttgtggaat ggacggcaca agatttgatt cgtgatgaaa acggcgatgt cgtcggcgta 540
 accgccatgg aaatggaaac cggcgaagtt tatattttcc acgctaaagc tgtgatgttt 600
 gctaccggcg gcggcggcgg tatttatgcg tcttctacca atgcctatat gaataccggc 660
 gatgggtttg gtattttgtg gcgtgcaggt atcccgttgg aagacatgga attctggcaa 720
 ttccaccgca ccggcgtggc aggtgcgggc gtgttgatta ccgaaggcgt acgcggcgag 780
 ggcggtatct tgttgaatgc cgacggcgaa cgctttatgg aacgctatgc gccgaccgta 840
 aaagacttgg cttctcgca cgttgtttcc cgcgcgatgg cgatggaaat ctacgaaggt 900
 cgcggtctgc gtaaaaacaa agaccatgtc ttactgaaaa tcgaccatat cggcgcagaa 960
 aaaattatgg aaaaactgcc gggcatccgc gagatttoca ttcagttcgc cggtatcgat 1020
 ccgattaaag acccgattcc cgttgtgccc actaccact atatgatggg cgttattccg 1080
 accaactacc atggcggaagt tgtcgttcct caaggcgacg aatacgaagt gcctgtaaaa 1140
 ggtctgtatg cggcaggtga gtgcgcctgt gcttccgtac acggtgcaaa ccgcttgggt 1200
 acgaactccc tgctggactt agtggatttc ggtaaagctg ccggcgacag catgattaaa 1260
 ttcaccaaag agcaaaagca ctggaaacct ttgcctgcta atgccggcga actgacccgc 1320
 caacgtatcg agcgttttga caatcaaact gatggtgaaa acgttgatgc attgcgccgc 1380

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gaactgcaac gctccgtaca attgcacgcc ggcgtgttcc gtactgatga gattctgagc 1440
aaaggcggtc gagaagtcac ggcgattgcc gagcgtgtga aacgtaccga aatcaaagac 1500
aagagcaaaag tgtggaatac cgcgcgtatc gaggccttgg aattggataa cctaattgaa 1560
gtggcgaaaag cgactttggt gtctgccgaa gcacgtaaag aatcacgcgg tgcgcacgct 1620
tcagacgacc atcctgagcg cgatgatgaa aactggatga aacatacgct gtaccattca 1680
gatgccaaata ccttgtccta caaacgggtg cacaccaagc ctttgagcgt ggaatacatc 1740
aaaccggcca agcgcgttta ttga                                     1764

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<210> 72
 <211> 587
 <212> PRT
 <213> *Neisseria meningitidis*

<220>
 <221> UNSURE
 <222> (23)
 <223> Xaa is any amino acid

<400> 72

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Met Gly Phe Pro Val Arg Lys Phe Asp Ala Val Ile Val Gly Gly Gly
  1             5             10             15

Gly Ala Gly Leu Arg Ala Xaa Leu Gln Leu Ser Lys Ser Gly Leu Asn
      20             25             30

Cys Ala Val Leu Ser Lys Val Phe Pro Thr Arg Ser His Thr Val Ala
      35             40             45

Ala Gln Gly Gly Ile Ser Ala Ser Leu Gly Asn Val Gln Glu Asp Arg
      50             55             60

Trp Asp Trp His Met Tyr Asp Thr Val Lys Gly Ser Asp Trp Leu Gly
      65             70             75             80

Asp Gln Asp Ala Ile Glu Phe Met Cys Arg Ala Ala Pro Glu Ala Val
      85             90             95

Ile Glu Leu Glu His Met Gly Met Pro Phe Asp Arg Val Glu Ser Gly
      100            105            110

Lys Ile Tyr Gln Arg Pro Phe Gly Gly His Thr Ala Glu His Gly Lys
      115            120            125

Arg Ala Val Glu Arg Ala Cys Ala Val Ala Asp Arg Thr Gly His Ala
      130            135            140

Met Leu His Thr Leu Tyr Gln Gln Asn Val Arg Ala Asn Thr Gln Phe
      145            150            155            160

Phe Val Glu Trp Thr Ala Gln Asp Leu Ile Arg Asp Glu Asn Gly Asp
      165            170            175

Val Val Gly Val Thr Ala Met Glu Met Glu Thr Gly Glu Val Tyr Ile
      180            185            190

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Phe His Ala Lys Ala Val Met Phe Ala Thr Gly Gly Gly Gly Arg Ile
195 200 205
Tyr Ala Ser Ser Thr Asn Ala Tyr Met Asn Thr Gly Asp Gly Leu Gly
210 215 220
Ile Cys Ala Arg Ala Gly Ile Pro Leu Glu Asp Met Glu Phe Trp Gln
225 230 235 240
Phe His Pro Thr Gly Val Ala Gly Ala Gly Val Leu Ile Thr Glu Gly
245 250 255
Val Arg Gly Glu Gly Gly Ile Leu Leu Asn Ala Asp Gly Glu Arg Phe
260 265 270
Met Glu Arg Tyr Ala Pro Thr Val Lys Asp Leu Ala Ser Arg Asp Val
275 280 285
Val Ser Arg Ala Met Ala Met Glu Ile Tyr Glu Gly Arg Gly Cys Gly
290 295 300
Lys Asn Lys Asp His Val Leu Leu Lys Ile Asp His Ile Gly Ala Glu
305 310 315 320
Lys Ile Met Glu Lys Leu Pro Gly Ile Arg Glu Ile Ser Ile Gln Phe
325 330 335
Ala Gly Ile Asp Pro Ile Lys Asp Pro Ile Pro Val Val Pro Thr Thr
340 345 350
His Tyr Met Met Gly Gly Ile Pro Thr Asn Tyr His Gly Glu Val Val
355 360 365
Val Pro Gln Gly Asp Glu Tyr Glu Val Pro Val Lys Gly Leu Tyr Ala
370 375 380
Ala Gly Glu Cys Ala Cys Ala Ser Val His Gly Ala Asn Arg Leu Gly
385 390 395 400
Thr Asn Ser Leu Leu Asp Leu Val Val Phe Gly Lys Ala Ala Gly Asp
405 410 415
Ser Met Ile Lys Phe Ile Lys Glu Gln Ser Asp Trp Lys Pro Leu Pro
420 425 430
Ala Asn Ala Gly Glu Leu Thr Arg Gln Arg Ile Glu Arg Leu Asp Asn
435 440 445
Gln Thr Asp Gly Glu Asn Val Asp Ala Leu Arg Arg Glu Leu Gln Arg
450 455 460
Ser Val Gln Leu His Ala Gly Val Phe Arg Thr Asp Glu Ile Leu Ser
465 470 475 480
Lys Gly Val Arg Glu Val Met Ala Ile Ala Glu Arg Val Lys Arg Thr
485 490 495

Glu Ile Lys Asp Lys Ser Lys Val Trp Asn Thr Ala Arg Ile Glu Ala
 500 505 510
 Leu Glu Leu Asp Asn Leu Ile Glu Val Ala Lys Ala Thr Leu Val Ser
 515 520 525
 Ala Glu Ala Arg Lys Glu Ser Arg Gly Ala His Ala Ser Asp Asp His
 530 535 540
 Pro Glu Arg Asp Asp Glu Asn Trp Met Lys His Thr Leu Tyr His Ser
 545 550 555 560
 Asp Ala Asn Thr Leu Ser Tyr Lys Pro Val His Thr Lys Pro Leu Ser
 565 570 575
 Val Glu Tyr Ile Lys Pro Ala Lys Arg Val Tyr
 580 585

<210> 73
 <211> 543
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 73
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 cccgcggttt ccacccgaca tcccagcgag gacatcatga gcctgaaaac ccgccttacc 120
 gaagatatga aaaccgcat gcgcgcgcaaa gatcaagttt ccctcggcac catccgcctc 180
 atcaatgccg ccgtcaaaca gtttgaagta gacgaacgca ccgaagccga cgatgccaaa 240
 atcacccgca tcctgaccaa aatggtcaaa cagcgcaaaag acggcgcgaa aatctacact 300
 gaagccggcc gtcaggattt ggagacaaa gaaaacgccc aaatcgacgt gctgcaccgc 360
 tacctgccgc aaatgctctc cgccggcgaa atccgcaccg ccgtcgaagc agccgttgcc 420
 gaaaccggcg cggcaggtat ggccgatatg ggcaaaagtga tggtcgtatt gaaaaccgcg 480
 ctgcgccgca aagccgatat gggcgaagtc aacaaaatct tgaaaaccgt actgaccgcc 540
 tga 543

<210> 74
 <211> 180
 <212> PRT
 <213> Neisseria gonorrhoeae

<400> 74
 Met Lys Thr His Arg Lys Thr Cys Ser Ala Val Cys Phe Ala Phe Gln
 1 5 10 15
 Thr Ala Ser Lys Pro Ala Val Ser Ile Arg His Pro Ser Glu Asp Ile
 20 25 30
 Met Ser Leu Lys Thr Arg Leu Thr Glu Asp Met Lys Thr Ala Met Arg
 35 40 45
 Ala Lys Asp Gln Val Ser Leu Gly Thr Ile Arg Leu Ile Asn Ala Ala
 50 55 60
 Val Lys Gln Phe Glu Val Asp Glu Arg Thr Glu Ala Asp Asp Ala Lys
 65 70 75 80

50	55	60
Val Lys Gln Phe Glu Val Asp Glu Arg Thr Glu Ala Asp Asp Ala Lys		
65	70	75 80
Ile Thr Ala Ile Leu Thr Lys Met Val Lys Gln Arg Lys Asp Ser Ala		
	85	90 95
Lys Ile Tyr Thr Glu Ala Gly Arg Gln Asp Leu Ala Asp Lys Glu Asn		
	100	105 110
Ala Glu Ile Glu Val Leu His Arg Tyr Leu Pro Gln Met Leu Ser Ala		
	115	120 125
Gly Glu Ile Arg Thr Glu Val Glu Ala Ala Val Ala Glu Thr Gly Ala		
	130	135 140
Ala Gly Met Ala Asp Met Gly Lys Val Met Gly Leu Leu Lys Thr Arg		
145	150	155 160
Leu Ala Gly Lys Ala		
	165	

<210> 77
 <211> 657
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 77
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 cttgaacaac tgatgcgttt cctccagttc ctgccggaat ttctgtttgc ccttttccgt 120
 attttcacc ataaaagtaa ccgtgcgctt aaattcgccc gccgtcatca catccacatc 180
 aatatcatgt tttttcaaca ggcggtggat attcggcact tccgccacca caccaccga 240
 accgatgacc gcaaacggag cggaacaat tttatccgcc acacacgcca tcatatagcc 300
 gccgcttgcc gcgaccttat cgacggcgac ggtcagcgga atattgcgtt cgcgcaaacg 360
 cctaagctgc gaagccgcca aaccgtaacc gtgaaccacg ccgcccggac tttccaatct 420
 gagcagaacc tcatcttcag gcttggaat caaaagcacc gccgtaatct catgacgcaa 480
 ggattctacg gcgtgtgcat acaaatcgcc gtcaaaatcc aacacaaaaa ggcgggattt 540
 ttgcgtttcg gcagattttc ccccgccctc cttcaaacgc tttttctctg ctttggttcc 600
 cgccttttcc tttttctttt cttttttttc ctgatgtttt gtctcttctc cgcttaa 657

<210> 78
 <211> 218
 <212> PRT
 <213> Neisseria gonorrhoeae

<400> 78
 Met Leu Ala Arg Arg Tyr Phe Phe Asn Ile Gln Pro Gly Ala Val Phe
 1 5 10 15
 Thr Asp Lys Leu Leu Glu Gln Leu Met Arg Phe Leu Gln Phe Leu Pro
 20 25 30
 Glu Phe Leu Phe Ala Leu Phe Arg Ile Phe Thr His Lys Ser Asn Arg
 35 40 45

Ala Leu Lys Phe Ala Arg Arg His His Ile His Ile Asn Ile Met Phe
 50 55 60
 Phe Gln Gln Ala Val Asp Ile Arg His Phe Arg His His Thr His Arg
 65 70 75 80
 Thr Asp Asp Arg Lys Arg Ser Gly Asn Asn Phe Ile Arg His Thr Arg
 85 90 95
 His His Ile Ala Ala Ala Cys Arg Asp Leu Ile Asp Gly Asp Gly Gln
 100 105 110
 Arg Asn Ile Ala Phe Ala Gln Thr Pro Lys Leu Arg Ser Arg Gln Thr
 115 120 125
 Val Thr Val Asn His Ala Ala Arg Thr Phe Gln Ser Glu Gln Asn Leu
 130 135 140
 Ile Phe Arg Leu Gly Asn Gln Lys His Arg Arg Asn Leu Met Thr Gln
 145 150 155 160
 Gly Phe Tyr Gly Val Cys Ile Gln Ile Ala Val Lys Ile Gln His Lys
 165 170 175
 Lys Ala Gly Phe Leu Arg Phe Gly Arg Phe Leu Pro Ala Leu Leu Gln
 180 185 190
 Thr Leu Phe Leu Cys Phe Gly Phe Arg Leu Phe Leu Phe Leu Phe Phe
 195 200 205
 Phe Phe Leu Met Phe Cys Leu Phe Leu Ala
 210 215

<210> 79
 <211> 657
 <212> DNA
 <213> Neisseria meningitidis

<220>
 <221> misc_feature
 <222> (310)..(519)
 <223> N is any nucleotide

<220>
 <221> misc_feature
 <222> (541)
 <223> N is any nucleotide

<400> 79
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 attttcaccc ataaaagtaa ccgtgcgctt aaattcgccc gccgtcatca catccacatc 180
 aatatcatgt tttttcaaca ggcggtggat attcgggtact tccgccacca caccaccga 240
 accgacaatc gcaaacggag cggaagcaat tttatccgcc acacacgccca tcatataacc 300
 gcgcgtcgcn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 360

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nnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnn 420
nnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnn 480
nnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnn aacacaaaaa ggcgtgattt 540
ntgcgttttcg gcagattttct cccaccctc cttcaaactg ttttcctctg ctttggttc 600
cgctttttcc tttttctttt cctctttttc ctgatgttgt gcctcttccc cgcttaa 657

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<210> 80
<211> 217
<212> PRT
<213> Neisseria meningitidis

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<220>
<221> UNSURE
<222> (104)..(172)
<223> Xaa is any amino acid

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<400> 80
Met Leu Ala Arg Cys His Phe Leu Asn Ile Gln Leu Arg Ala Val Leu
 1             5             10             15

Ala Asp Lys Leu Leu Glu Gln Leu Met Arg Phe Leu Gln Phe Leu Ser
      20             25             30

Glu Phe Leu Phe Ala Leu Phe Arg Ile Phe Thr His Lys Ser Asn Arg
 35             40             45

Ala Leu Lys Phe Ala Arg Arg His His Ile His Ile Asn Ile Met Phe
 50             55             60

Phe Gln Gln Ala Val Asp Ile Arg Tyr Phe Arg His His Thr His Arg
 65             70             75             80

Thr Asp Asn Arg Lys Arg Ser Gly Ser Asn Phe Ile Arg His Thr Arg
      85             90             95

His His Ile Thr Ala Ala Arg Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 100             105             110

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 115             120             125

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 130             135             140

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 145             150             155             160

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gln His Lys
      165             170             175

Lys Ala Phe Xaa Arg Phe Gly Arg Phe Leu Pro Thr Leu Leu Gln Thr
      180             185             190

Phe Phe Leu Cys Phe Gly Phe Arg Leu Phe Leu Phe Leu Phe Leu Phe
 195             200             205

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Phe Leu Met Leu Cys Leu Phe Pro Ala
210 215

<210> 81
<211> 657
<212> DNA
<213> Neisseria meningitidis

<400> 81
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cttgaacaac tgatgcgttt cctccagttc ctgtcggaaat ttctgtttgc ctttttccgt 120
atthttcacc ataaaagtaa ccgtgcgctt aaattcgccc gccgtcatca catccacatc 180
aatatcatgt tttttcaaca ggcggtggat attcgggtact tccgctacaa caccacccga 240
accgacaatc gcaaacggag cggaacaat tttatccgcc acacacgcca tcatataacc 300
accgctcgcc gccaccttat cgacggcgac ggtcagcgga atattgcgtt cgcgcaaacg 360
cctaagctgc gaagccgcca aaccgtaacc gtgaaccacg ccgcccggac tttccaatct 420
aagcagaacc tcatcttcag gcttggaat caaaagcacc gccgtaatct catgacgcaa 480
ggattctacg gcgtgtgcat acaaatcgcc gtcaaaatcc aacacaaaaa ggcgggattt 540
ttgcgtttcg gaagattttt cccaccctc cttcaaacgc tttttctctg ctttggttc 600
cgctttttcc tttttctttt cctctttttc ctgatgtttt gcctcttccc cgcttaa 657

<210> 82
<211> 218
<212> PRT
<213> Neisseria meningitidis

<400> 82
Met Leu Ala Arg Cys His Phe Leu Asn Ile Gln Leu Arg Ala Val Leu
1 5 10 15
Ala Asp Lys Leu Leu Glu Gln Leu Met Arg Phe Leu Gln Phe Leu Ser
20 25 30
Glu Phe Leu Phe Ala Leu Phe Arg Ile Phe Thr His Lys Ser Asn Arg
35 40 45
Ala Leu Lys Phe Ala Arg Arg His His Ile His Ile Asn Ile Met Phe
50 55 60
Phe Gln Gln Ala Val Asp Ile Arg Tyr Phe Arg Tyr Asn Thr His Arg
65 70 75 80
Thr Asp Asn Arg Lys Arg Ser Gly Asn Asn Phe Ile Arg His Thr Arg
85 90 95
His His Ile Thr Thr Ala Arg Arg His Leu Ile Asp Gly Asp Gly Gln
100 105 110
Arg Asn Ile Ala Phe Ala Gln Thr Pro Lys Leu Arg Ser Arg Gln Thr
115 120 125
Val Thr Val Asn His Ala Ala Arg Thr Phe Gln Ser Lys Gln Asn Leu
130 135 140

Ile Phe Arg Leu Gly Asn Gln Lys His Arg Arg Asn Leu Met Thr Gln
 145 150 155 160

Gly Phe Tyr Gly Val Cys Ile Gln Ile Ala Val Lys Ile Gln His Lys
 165 170 175

Lys Ala Gly Phe Leu Arg Phe Gly Arg Phe Leu Pro Thr Leu Leu Gln
 180 185 190

Thr Leu Phe Leu Cys Phe Gly Phe Arg Leu Phe Leu Phe Leu Phe Leu
 195 200 205

Phe Phe Leu Met Phe Cys Leu Phe Pro Ala
 210 215

<210> 83
 <211> 657
 <212> DNA
 <213> Neisseria meningitidis

<400> 83
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 cttgaacaac tgatgcgttt cctccagttc ctgtcggaaat ttctgtttgc ctttttccgt 120
 attttcaccc ataaaagtaa ccgtgcgctt aaattcgccc gccgtcatca catccacatc 180
 aatatcatgt tttttcaaca ggcggtggat attcggtact tccgccacca caccaccga 240
 accgacaatc gcaaacggag cggaagcaat tttatccgcc acacacgccca tcatataacc 300
 gccgctcgcc gccaccttat cgacggcgac ggtcagcgga atattgcgtt cgcgcaaacg 360
 cytaagctgc gaagccgcca aaccgtaacc gtgaaccacg ccgcccggac tttccaatct 420
 gagcagaacc tcattcttcag gcttggaat caaaagcacc gccgtaatct catgacgcaa 480
 ggattctacg gcgtgtgcat acaaatcgcc gtcaaaatcc aacacaaaaa ggcgggattt 540
 ttgcgtttcg gcagatttct cccacccctc ctcaaacgc tttttctctg ctttggttc 600
 cgccctttcc tttttctttt cctctttttc ctgatgtttt gcctcttccc cgcttaa 657

<210> 84
 <211> 218
 <212> PRT
 <213> Neisseria meningitidis

<220>
 <221> UNSURE
 <222> (121)
 <223> Xaa is any amino acid

<400> 84
 Met Leu Ala Arg Cys His Phe Leu Asn Ile Gln Leu Arg Ala Val Leu
 1 5 10 15

Ala Asp Lys Leu Leu Glu Gln Leu Met Arg Phe Leu Gln Phe Leu Ser
 20 25 30

Glu Phe Leu Phe Ala Leu Phe Arg Ile Phe Thr His Lys Ser Asn Arg
 35 40 45

Ala Leu Lys Phe Ala Arg Arg His His Ile His Ile Asn Ile Met Phe
 50 55 60

Phe Gln Gln Ala Val Asp Ile Arg Tyr Phe Arg His His Thr His Arg
 65 70 75 80
 Thr Asp Asn Arg Lys Arg Ser Gly Ser Asn Phe Ile Arg His Thr Arg
 85 90 95
 His His Ile Thr Ala Ala Arg Arg His Leu Ile Asp Gly Asp Gly Gln
 100 105 110
 Arg Asn Ile Ala Phe Ala Gln Thr Xaa Lys Leu Arg Ser Arg Gln Thr
 115 120 125
 Val Thr Val Asn His Ala Ala Arg Thr Phe Gln Ser Glu Gln Asn Leu
 130 135 140
 Ile Phe Arg Leu Gly Asn Gln Lys His Arg Arg Asn Leu Met Thr Gln
 145 150 155 160
 Gly Phe Tyr Gly Val Cys Ile Gln Ile Ala Val Lys Ile Gln His Lys
 165 170 175
 Lys Ala Gly Phe Leu Arg Phe Gly Arg Phe Leu Pro Thr Leu Leu Gln
 180 185 190
 Thr Leu Phe Leu Cys Phe Gly Phe Arg Leu Phe Leu Phe Leu Phe Leu
 195 200 205
 Phe Phe Leu Met Phe Cys Leu Phe Pro Ala
 210 215

<210> 85
 <211> 657
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 85
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 cttgaacaac tgatgcgttt cctccagttc ctgtcggaat ttctgtttgc ctttttccgt 120
 attttcacccc ataaaagtaa ccgtgcgctt aaattcgccc gccgtcatca catccacatc 180
 aatatcatgt tttttcaaca ggcggtggat attcggtact tccgctacaa caccaccga 240
 accgacaatc gcaaacggag cggaaacaat tttatccgcc acacacgcca tcatataacc 300
 accgctcgcc gccaccttat cgacggcgac ggtcagcgga atattgcgtt cgcgcaaacg 360
 cctaagctgc gaagccgcca aaccgtaacc gtgaaccacg ccgcccggac tttccaatct 420
 aagcagaacc tcatcttcag gcttggcaat caaaagcacc gccgtaatct catgacgcaa 480
 ggattctacg gcgtgtgcat acaaatcgcc gtcaaaatcc aacacaaaaa ggcgggattt 540
 ttgcgtttcg gaagatttct cccacccctc cttcaaacgc tttttctctg ctttggtctc 600
 cgccttttcc tttttctttt cctcttttcc ctgatgtttt gcctcttccc cgcttaa 657

<210> 86
 <211> 218
 <212> PRT
 <213> *Neisseria meningitidis*

<400> 86

Met Leu Ala Arg Cys His Phe Leu Asn Ile Gln Leu Arg Ala Val Leu
 1 5 10 15
 Ala Asp Lys Leu Leu Glu Gln Leu Met Arg Phe Leu Gln Phe Leu Ser
 20 25 30
 Glu Phe Leu Phe Ala Leu Phe Arg Ile Phe Thr His Lys Ser Asn Arg
 35 40 45
 Ala Leu Lys Phe Ala Arg Arg His His Ile His Ile Asn Ile Met Phe
 50 55 60
 Phe Gln Gln Ala Val Asp Ile Arg Tyr Phe Arg Tyr Asn Thr His Arg
 65 70 75 80
 Thr Asp Asn Arg Lys Arg Ser Gly Asn Asn Phe Ile Arg His Thr Arg
 85 90 95
 His His Ile Thr Thr Ala Arg Arg His Leu Ile Asp Gly Asp Gly Gln
 100 105 110
 Arg Asn Ile Ala Phe Ala Gln Thr Pro Lys Leu Arg Ser Arg Gln Thr
 115 120 125
 Val Thr Val Asn His Ala Ala Arg Thr Phe Gln Ser Lys Gln Asn Leu
 130 135 140
 Ile Phe Arg Leu Gly Asn Gln Lys His Arg Arg Asn Leu Met Thr Gln
 145 150 155 160
 Gly Phe Tyr Gly Val Cys Ile Gln Ile Ala Val Lys Ile Gln His Lys
 165 170 175
 Lys Ala Gly Phe Leu Arg Phe Gly Arg Phe Leu Pro Thr Leu Leu Gln
 180 185 190
 Thr Leu Phe Leu Cys Phe Gly Phe Arg Leu Phe Leu Phe Leu Phe Leu
 195 200 205
 Phe Phe Leu Met Phe Cys Leu Phe Pro Ala
 210 215

<210> 87

<211> 318

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 87

atgcctttga ccatgctgtg cagcaggacg tgcggtttgt tcataatata gtccgaccgg 60
 aaaagcggag gaaacgcagt gccgcgccct tcccccttct tgccgtggca ggcgatgcag 120
 ttggattcgt acactttttg cccttttgtc atgatgctgt tgtcggcggc agaagcggcg 180
 gcgcagaggc agcacaagat gaaggcggtc ggcagtcggg ttgtgttcat tggcgtttcc 240
 cctaattgtt tgaaaccttg ttttttgatt ttgcctttac ggggtgaaaa gtttttttgg 300
 cccaaatccg gaatttag 318

<210> 88
<211> 105
<212> PRT
<213> *Neisseria gonorrhoeae*

<400> 88
Met Pro Leu Thr Met Leu Cys Ser Arg Thr Cys Gly Leu Phe Ile Ile
1 5 10 15
Gln Ser Asp Arg Lys Ser Gly Gly Asn Ala Val Pro Arg Pro Ser Pro
20 25 30
Phe Leu Pro Trp Gln Ala Met Gln Leu Asp Ser Tyr Thr Phe Cys Pro
35 40 45
Phe Val Met Met Leu Leu Ser Ala Ala Glu Ala Ala Gln Arg Gln
50 55 60
His Lys Met Lys Ala Val Gly Ser Arg Val Val Phe Ile Gly Val Ser
65 70 75 80
Pro Asn Val Leu Lys Pro Cys Phe Leu Ile Leu Pro Leu Arg Gly Glu
85 90 95
Lys Phe Phe Trp Pro Lys Ser Gly Ile
100 105

<210> 89
<211> 306
<212> DNA
<213> *Neisseria meningitidis*

<400> 89
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tagagcggcg gaaacatggt tccgcggcct tcgccctttt tgccgtggca ggcgacgcag 120
ttgattcgt acactttttg cccttttgtc atgatgctgt tgtcggcggc agaagcggcg 180
gcgcagaagc agcccaagac gagggcggtc ggcagtcggg ttgtgttcat tgggtgtttcc 240
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cagtag 306

<210> 90
<211> 101
<212> PRT
<213> *Neisseria meningitidis*

<220>
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<222> (21)
<223> Xaa is any amino acid

<220>
<221> UNSURE
<222> (94)
<223> Xaa is any amino acid

<400> 90

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1 5 10 15

Lys Ser Glu Arg Xaa Ser Gly Gly Asn Met Val Pro Arg Pro Ser Pro
20 25 30

Phe Leu Pro Trp Gln Ala Thr Gln Leu Asp Ser Tyr Thr Phe Cys Pro
35 40 45

Phe Val Met Met Leu Leu Ser Ala Ala Glu Ala Ala Ala Gln Lys Gln
50 55 60

Pro Lys Thr Arg Ala Val Gly Ser Arg Val Val Phe Ile Gly Val Ser
65 70 75 80

Phe Met Phe Glu Thr Leu Leu Leu Ile Leu Arg Ser Gly Xaa Lys Ile
85 90 95

Phe Leu Pro Asn Gln
100

<210> 91

<211> 306

<212> DNA

<213> Neisseria meningitidis

<400> 91

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ttggattcgt acactttttg cccttttgtc atgatgctgt tgcggcggc agaagcggcg 180
gcgcagaggc agcccaagac gagggcggtc ggcagtcggg ttgtgttcat tgggtgtttcc 240
ttaatgtttg aaaccttggt gttgattttg cgtagcgggt gaaagatttt cttgccgaat 300
cggtag 306

<210> 92

<211> 99

<212> PRT

<213> Neisseria meningitidis

<400> 92

Met Pro Leu Thr Met Leu Cys Ser Ser Thr Cys Gly Phe Phe Met Met
1 5 10 15

Lys Ser Glu Arg Ser Gly Gly Asn Met Val Pro Arg Pro Ser Pro Phe
20 25 30

Leu Pro Trp Gln Ala Thr Gln Leu Asp Ser Tyr Thr Phe Cys Pro Phe
35 40 45

Val Met Met Leu Leu Ser Ala Ala Glu Ala Ala Ala Gln Arg Gln Pro
50 55 60

Lys Thr Arg Ala Val Gly Ser Arg Val Val Phe Ile Gly Val Ser Leu

65		70		75		80									
Met	Phe	Glu	Thr	Leu	Leu	Leu	Ile	Leu	Arg	Ser	Gly	Lys	Ile	Phe	Leu
				85					90					95	

Pro Asn Arg

<210> 93
 <211> 375
 <212> DNA
 <213> *Neisseria gonorrhoeae*

<400> 93

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aaagcactgc cccacctcaa cgacacgatg ctgctgttta cgggattgtg gctgatgaag 180
attacccatt tctccccgtt caacgcgcct tggtcggca caaaaatcct gctcctgttc 240
gcctacatcg cactgggcat ggtaatgatg cgcgcccgtc cgcgttcgac caagttctac 300
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<210> 94
 <211> 124
 <212> PRT
 <213> *Neisseria gonorrhoeae*

<400> 94

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Thr	Ile	Leu	Val	Phe	Asn	Ile	Arg	Phe	Phe	Leu	Leu	Trp	Lys	Asn	Pro
			20					25					30		
Glu	Lys	Pro	Leu	Val	Gly	Phe	Trp	Lys	Ala	Leu	Pro	His	Leu	Asn	Asp
		35					40					45			
Thr	Met	Leu	Leu	Phe	Thr	Gly	Leu	Trp	Leu	Met	Lys	Ile	Thr	His	Phe
	50					55					60				
Ser	Pro	Phe	Asn	Ala	Pro	Trp	Leu	Gly	Thr	Lys	Ile	Leu	Leu	Leu	Phe
	65				70					75					80
Ala	Tyr	Ile	Ala	Leu	Gly	Met	Val	Met	Met	Arg	Ala	Arg	Pro	Arg	Ser
			85					90						95	
Thr	Lys	Phe	Tyr	Thr	Val	Tyr	Leu	Leu	Ala	Met	Cys	Cys	Ile	Ala	Cys
			100					105					110		
Ile	Val	Tyr	Leu	Ala	Lys	Thr	Lys	Val	Leu	Pro	Phe				
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<210> 95

<211> 285
<212> DNA
<213> Neisseria meningitidis

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tggctcggta caaaaatcct gcttctgctc gcctatatcg cattgggtat gatgatgatg 180
cgcgcccgtc cgcgttcgac caagttctac accgtttacc tgctcgccat gtgttgcgtc 240
gcctgcatcg tttaccttgc caaaaccaa gtcctgcctt tctga 285

<210> 96
<211> 94
<212> PRT
<213> Neisseria meningitidis

<400> 96
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1 5 10 15
Asn Asp Thr Met Leu Leu Phe Thr Gly Leu Trp Leu Met Lys Ile Thr
20 25 30
His Phe Ser Pro Phe Asn Ala Pro Trp Leu Gly Thr Lys Ile Leu Leu
35 40 45
Leu Leu Ala Tyr Ile Ala Leu Gly Met Met Met Met Arg Ala Arg Pro
50 55 60
Arg Ser Thr Lys Phe Tyr Thr Val Tyr Leu Leu Ala Met Cys Cys Val
65 70 75 80
Ala Cys Ile Val Tyr Leu Ala Lys Thr Lys Val Leu Pro Phe
85 90

<210> 97
<211> 375
<212> DNA
<213> Neisseria meningitidis

<220>
<221> misc_feature
<222> (79)
<223> N is any nucleotide

<400> 97
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aaggcaactgc cccaccttaa cgacaccatg ctgctgttta cgggattgtg gctgatgaaa 180
attaccatt tctccccgtt caacgcgcct tggctcggta caaaaatcct gcttctgctc 240
gcctatatcg cattgggtat gatgatgatg cgcgcccgtc cgcgttcgac caagttctac 300
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gtcctgcctt tctga 375

<210> 98
<211> 124
<212> PRT
<213> Neisseria meningitidis

<400> 98
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Thr Ile Leu Val Phe Asn Ile Arg Val Phe Xaa Leu Trp Lys Asn Pro
20 25 30
Glu Lys Pro Leu Ala Gly Phe Trp Lys Ala Leu Pro His Leu Asn Asp
35 40 45
Thr Met Leu Leu Phe Thr Gly Leu Trp Leu Met Lys Ile Thr His Phe
50 55 60
Ser Pro Phe Asn Ala Pro Trp Leu Gly Thr Lys Ile Leu Leu Leu Leu
65 70 75 80
Ala Tyr Ile Ala Leu Gly Met Met Met Met Arg Ala Arg Pro Arg Ser
85 90 95
Thr Lys Phe Tyr Thr Val Tyr Leu Leu Ala Met Cys Cys Leu Thr Cys
100 105 110
Ile Val Tyr Leu Ala Lys Thr Lys Val Leu Pro Phe
115 120

<210> 99
<211> 312
<212> DNA
<213> Neisseria gonorrhoeae

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ttccaaaccg atattgtcaa cggtcggacg gcgacctacg gctgccaaca tatattcggc 180
aacaaatacg cctttttcgc catcctgctc ccaatggact tctacattgc cgtctgcgctc 240
gagtttgacc tcggttttag catccagatg cagtttcaat tcttctccga acacggcttt 300
cgctcgtct ga 312

<210> 100
<211> 103
<212> PRT
<213> Neisseria gonorrhoeae

<400> 100
Met Gln Gln Gly Gln Leu Val Gly Arg Val Ala Arg Asn Lys Asp Met
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Arg Asn Ala Gly Leu His Gly Gln Arg Ile Gly Asn Gly Tyr Ala Ala
20 25 30

Arg Val Phe Val Asp Ile Asp Val Phe Gln Thr Asp Ile Val Asn Val
35 40 45

Arg Thr Ala Thr Tyr Gly Cys Gln His Ile Phe Gly Asn Lys Tyr Ala
50 55 60

Phe Phe Ala Ile Leu Leu Pro Met Asp Phe Tyr Ile Ala Val Cys Val
65 70 75 80

Glu Phe Asp Leu Gly Phe Ser Ile Gln Met Gln Phe Gln Phe Phe Ser
85 90 95

Glu His Gly Phe Arg Leu Val
100

<210> 101
<211> 312
<212> DNA
<213> Neisseria meningitidis

<400> 101
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ttccaaaccg atattgtcaa cgttcggacg gcggcccacg gctgccagca tatattcggc 180
aacaaatacg cctttttcgc catcctgctc ccaatggact tctacattgc cgtctgcatc 240
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cgctcgtct ga 312

<210> 102
<211> 103
<212> PRT
<213> Neisseria meningitidis

<400> 102
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1 5 10 15

Arg Asn Thr Gly Leu His Gly Gln Arg Val Gly Asn Arg Tyr Ala Ala
20 25 30

Arg Ile Phe Phe Asp Ile Asp Ile Phe Gln Thr Asp Ile Val Asn Val
35 40 45

Arg Thr Ala Ala His Gly Cys Gln His Ile Phe Gly Asn Lys Tyr Ala
50 55 60

Phe Phe Ala Ile Leu Leu Pro Met Asp Phe Tyr Ile Ala Val Cys Ile
65 70 75 80

Glu Phe Asp Leu Gly Phe Ser Ile Gln Met Gln Phe Gln Phe Phe Ala
85 90 95

Glu His Gly Val Arg Leu Val
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<210> 103
<211> 312
<212> DNA
<213> *Neisseria meningitidis*

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ttccaaaccg atattgtcaa cgttcggacg gcggcctacg gctgccagca tatattcggc 180
aacaaatacg cttttttcgc catcctgctc ccaatggact tctacattgc cgtctgcgtc 240
gagtttggcc tcggttttag catccaaatg cagtttcaat tcttcaccga acacggcttt 300
cgctcgtct ga 312

<210> 104
<211> 103
<212> PRT
<213> *Neisseria meningitidis*

<400> 104
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Arg Asn Thr Gly Leu His Ser Gln Arg Ile Gly Asn Gly Tyr Ala Ala
20 25 30
Arg Ile Phe Phe Asp Ile Asp Val Phe Gln Thr Asp Ile Val Asn Val
35 40 45
Arg Thr Ala Ala Tyr Gly Cys Gln His Ile Phe Gly Asn Lys Tyr Ala
50 55 60
Phe Phe Ala Ile Leu Leu Pro Met Asp Phe Tyr Ile Ala Val Cys Val
65 70 75 80
Glu Phe Gly Leu Gly Phe Ser Ile Gln Met Gln Phe Gln Phe Phe Thr
85 90 95
Glu His Gly Phe Arg Leu Val
100

<210> 105
<211> 268
<212> DNA
<213> *Neisseria gonorrhoeae*

<400> 105
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gaaccggaag gaaaaacgct ggcagattac ggcggtacc cgtccgcact ggatgcagtg 180
aaacagaaca acgatgcggc agccgccgcc tatttggaaa acgcaggaga cagcgcgatg 240
gcggaaaatg tccgcaagga gtggctga 268

<210> 106

<211> 89
<212> PRT
<213> Neisseria gonorrhoeae

<400> 106
Leu Leu Ala Ala Leu Val Leu Ala Ala Cys Ser Ser Thr Asn Thr Leu
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Pro Ala Gly Lys Thr Pro Ala Asp Asn Ile Glu Thr Ala Asp Leu Ser
20 25 30
Ala Ser Val Pro Thr Arg Pro Ala Glu Pro Glu Gly Lys Thr Leu Ala
35 40 45
Asp Tyr Gly Gly Tyr Pro Ser Ala Leu Asp Ala Val Lys Gln Asn Asn
50 55 60
Asp Ala Ala Ala Ala Ala Tyr Leu Glu Asn Ala Gly Asp Ser Ala Met
65 70 75 80
Ala Glu Asn Val Arg Lys Glu Trp Leu
85

<210> 107
<211> 1572
<212> DNA
<213> Neisseria meningitidis

<400> 107
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gacctttcgg caagcgttcc caccgcccct gccgaaccgg aaagaaaaaac gctggcagat 180
tacggcggct acccgctccgc actggatgca gtgaaacaga aaaacgatgc cgcgctcgcc 240
gcctatattg aaaacgcccg cgacagcgcg atggcgga aaatgtccgcaa cgagtggctg 300
aagtctttgg gcgcacgcag acagtggacg ctgtttgcac aggaatacgc caaactcgaa 360
ccggcagggc gcgccaaga agtcgaatgc tacgccgatt cgagccgcaa cgactatacg 420
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 <211> 524
 <212> PRT
 <213> *Neisseria meningitidis*

<400> 108

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Pro	Ala	Asp	Asn	Ile	Glu	Thr	Ala	Asp	Leu	Ser	Ala	Ser	Val	Pro	Thr	35	40	45	
Arg	Pro	Ala	Glu	Pro	Glu	Arg	Lys	Thr	Leu	Ala	Asp	Tyr	Gly	Gly	Tyr	50	55	60	
Pro	Ser	Ala	Leu	Asp	Ala	Val	Lys	Gln	Lys	Asn	Asp	Ala	Ala	Val	Ala	65	70	75	80
Ala	Tyr	Leu	Glu	Asn	Ala	Gly	Asp	Ser	Ala	Met	Ala	Glu	Asn	Val	Arg	85	90	95	
Asn	Glu	Trp	Leu	Lys	Ser	Leu	Gly	Ala	Arg	Arg	Gln	Trp	Thr	Leu	Phe	100	105	110	
Ala	Gln	Glu	Tyr	Ala	Lys	Leu	Glu	Pro	Ala	Gly	Arg	Ala	Gln	Glu	Val	115	120	125	
Glu	Cys	Tyr	Ala	Asp	Ser	Ser	Arg	Asn	Asp	Tyr	Thr	Arg	Ala	Ala	Glu	130	135	140	
Leu	Val	Lys	Asn	Thr	Gly	Lys	Leu	Pro	Ser	Gly	Cys	Thr	Lys	Leu	Leu	145	150	155	160
Glu	Gln	Ala	Ala	Ala	Ser	Gly	Leu	Leu	Asp	Gly	Asn	Asp	Ala	Trp	Arg	165	170	175	
Arg	Val	Arg	Gly	Leu	Leu	Ala	Gly	Arg	Gln	Thr	Thr	Asp	Ala	Arg	Asn	180	185	190	
Leu	Ala	Ala	Ala	Leu	Gly	Ser	Pro	Phe	Asp	Gly	Gly	Thr	Gln	Gly	Ser	195	200	205	
Arg	Glu	Tyr	Ala	Leu	Leu	Asn	Val	Ile	Gly	Lys	Glu	Ala	Arg	Lys	Ser	210	215	220	
Pro	Asn	Ala	Ala	Ala	Leu	Leu	Ser	Glu	Met	Glu	Ser	Gly	Leu	Ser	Leu	225	230	235	240
Glu	Gln	Arg	Ser	Phe	Ala	Trp	Gly	Val	Leu	Gly	His	Tyr	Gln	Ser	Gln	245	250	255	
Asn	Leu	Asn	Val	Pro	Ala	Ala	Leu	Asp	Tyr	Tyr	Gly	Lys	Val	Ala	Asp				

260					265					270					
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Leu	Arg	Ala	Arg	Arg	Trp	Asp	Glu	Leu	Ala	Ser	Val	Ile	Ser	His	Met
		290				295					300				
Pro	Glu	Lys	Leu	Gln	Lys	Ser	Pro	Thr	Trp	Leu	Tyr	Trp	Leu	Ala	Arg
					310					315					320
Ser	Arg	Ala	Ala	Thr	Gly	Asn	Thr	Gln	Glu	Ala	Glu	Lys	Leu	Tyr	Lys
				325					330					335	
Gln	Ala	Ala	Ala	Thr	Gly	Arg	Asn	Phe	Tyr	Ala	Val	Leu	Ala	Gly	Glu
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		355					360					365			
Lys	Asn	Ser	Val	Arg	Arg	Met	Ala	Glu	Asp	Gly	Ala	Val	Lys	Arg	Ala
		370				375					380				
Leu	Val	Leu	Phe	Gln	Asn	Ser	Gln	Ser	Ala	Gly	Asp	Ala	Lys	Met	Arg
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Arg	Gln	Ala	Gln	Ala	Glu	Trp	Arg	Phe	Ala	Thr	Arg	Gly	Phe	Asp	Glu
				405					410					415	
Asp	Lys	Leu	Leu	Thr	Ala	Ala	Gln	Thr	Ala	Phe	Asp	His	Gly	Phe	Tyr
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Asp	Met	Ala	Val	Asn	Ser	Ala	Glu	Arg	Thr	Asp	Arg	Lys	Leu	Asn	Tyr
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Thr	Leu	Arg	Tyr	Ile	Ser	Pro	Phe	Lys	Asp	Thr	Val	Ile	Arg	His	Ala
		450				455					460				
Gln	Asn	Val	Asn	Val	Asp	Pro	Ala	Trp	Val	Tyr	Gly	Leu	Ile	Arg	Gln
				470						475					480
Glu	Ser	Arg	Phe	Val	Ile	Gly	Ala	Gln	Ser	Arg	Val	Gly	Ala	Gln	Gly
				485				490						495	
Leu	Met	Gln	Val	Met	Pro	Ala	Thr	Ala	Arg	Glu	Ile	Ala	Gly	Lys	Ile
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<210> 109
 <211> 1851
 <212> DNA
 <213> Neisseria meningitidis

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cgcaacaatg tgcccgatgc cggcaaaaanc agcgtcctcc gtatggcgga agacggcgcg 1140
attaagcgcg cgctggtgct gttccgaaac agccgaaccg ccggcgatgc gaaaatgcgc 1200
cgtcnggctc aggcggaatg gcgtttcggc acacgcggct tcgatgaaga caagctgctg 1260
accgcccgcgc aaaccgcggt cgaccacggt ttttacgata tggcggtcaa cagcgcgga 1320
cgcaccgacc gcaaaactcaa ctacaccttg cgctacattt cgnnnnntna ngacacggtg 1380
atccgccacg cgcaaaatgt taatgtcgat ccggcggtggg tttacgggct gattcgtcag 1440
gaaagccgct tcgttatggg cgcgcaatcc cgcgtaggcg cgcaggggct gatgcaggtt 1500
atgcctgcca ccgcgcgcga aatcgccggc aaaatcggtg tggatgccgc acaactttac 1560
accgcccgcgc gcaatatccg tatggggacg tggatatatg ccgacaccaa acgcccctg 1620
caaaacaacg aagtccctgc caccgcaggc tataacgccg gtcccggcag ggcgcccgga 1680
tggcaggcgg acacgcccct cgaaggcgcg gtatatgccg aaaccatccc gttttccgaa 1740
acgcgcgact atgtcaaaaa agtgcgtggc aatgccgcct actacgcctc cctcttcggc 1800
gcgcgcgaca tcccgtcaa acagcgtatg ggcattgtcc ccgccgctg a 1851

```

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<210> 110
<211> 616
<212> PRT
<213> Neisseria meningitidis

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<220>
<221> UNSURE
<222> (15)
<223> Xaa is any amino acid

```

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<220>
<221> UNSURE
<222> (23)
<223> Xaa is any amino acid

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<220>
<221> UNSURE
<222> (49)
<223> Xaa is any amino acid

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<220>
<221> UNSURE
<222> (54)
<223> Xaa is any amino acid

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<220>
<221> UNSURE
<222> (57)
<223> Xaa is any amino acid

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<220>
<221> UNSURE
<222> (112)
<223> Xaa is any amino acid

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<220>
<221> UNSURE

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<222> (115)
<223> Xaa is any amino acid

<220>
<221> UNSURE
<222> (267)
<223> Xaa is any amino acid

<220>
<221> UNSURE
<222> (289)..(291)
<223> Xaa is any amino acid

<220>
<221> UNSURE
<222> (293)..(297)
<223> Xaa is any amino acid

<220>
<221> UNSURE
<222> (299)..(318)
<223> Xaa is any amino acid

<220>
<221> UNSURE
<222> (330)
<223> Xaa is any amino acid

<220>
<221> UNSURE
<222> (332)
<223> Xaa is any amino acid

<220>
<221> UNSURE
<222> (341)
<223> Xaa is any amino acid

<220>
<221> UNSURE
<222> (343)
<223> Xaa is any amino acid

<220>
<221> UNSURE
<222> (350)
<223> Xaa is any amino acid

<220>
<221> UNSURE
<222> (357)
<223> Xaa is any amino acid

<220>
<221> UNSURE
<222> (370)
<223> Xaa is any amino acid

<220>
 <221> UNSURE
 <222> (402)
 <223> Xaa is any amino acid

<220>
 <221> UNSURE
 <222> (455)..(457)
 <223> Xaa is any amino acid

<400> 110
 Met Tyr Pro Pro Ser Leu Lys His Ser Leu Pro Leu Leu Val Xaa Leu
 1 5 10 15
 Val Leu Ala Ala Cys Ser Xaa Thr Asn Thr Leu Ser Ala Asp Lys Thr
 20 25 30
 Pro Ala Asp Asn Ile Glu Thr Ala Asp Leu Ser Ala Ser Val Pro Thr
 35 40 45
 Xaa Pro Ala Glu Pro Glu Xaa Lys Thr Xaa Ala Asp Tyr Gly Gly Tyr
 50 55 60
 Pro Ser Ala Leu Asp Ala Val Lys Gln Lys Asn Asp Ala Ala Val Ala
 65 70 75 80
 Ala Tyr Leu Glu Asn Ala Gly Asp Ser Ala Met Ala Glu Asn Val Arg
 85 90 95
 Asn Glu Trp Leu Lys Ser Leu Gly Ala Arg Arg Gln Trp Thr Leu Xaa
 100 105 110
 Ala Xaa Glu Tyr Ala Lys Leu Glu Pro Ala Xaa Arg Ala Gln Glu Val
 115 120 125
 Glu Cys Tyr Ala Asp Ser Ser Arg Asn Asp Tyr Thr Arg Ala Ala Glu
 130 135 140
 Leu Val Lys Asn Thr Gly Lys Leu Pro Ser Gly Cys Thr Lys Leu Leu
 145 150 155 160
 Glu Gln Ala Ala Ala Ser Gly Leu Leu Asp Gly Asn Asp Ala Trp Arg
 165 170 175
 Arg Val Arg Gly Leu Leu Ala Gly Arg Gln Thr Thr Asp Ala Arg Asn
 180 185 190
 Leu Ala Ala Ala Leu Gly Ser Pro Phe Asp Gly Gly Thr Gln Gly Ser
 195 200 205
 Arg Glu Tyr Ala Leu Leu Asn Val Ile Gly Lys Glu Ala Arg Lys Ser
 210 215 220
 Pro Asn Ala Ala Ala Leu Leu Ser Glu Met Glu Ser Gly Leu Ser Leu
 225 230 235 240

Glu	Gln	Arg	Ser	Phe	Ala	Trp	Gly	Val	Leu	Gly	His	Tyr	Gln	Ser	Gln	245	250	255
Asn	Leu	Asn	Val	Pro	Ala	Ala	Leu	Asp	Tyr	Xaa	Gly	Lys	Val	Ala	Asp	260	265	270
Arg	Arg	Gln	Leu	Thr	Asp	Asp	Gln	Ile	Glu	Trp	Tyr	Ala	Arg	Ala	Ala	275	280	285
Xaa	Xaa	Xaa	Arg	Xaa	Xaa	Xaa	Xaa	Xaa	Ala	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	290	295	300
Xaa	Xaa	Lys	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Ala	Arg	305	310	315
Ser	Arg	Ala	Ala	Thr	Gly	Asn	Thr	Gln	Xaa	Ala	Xaa	Lys	Leu	Tyr	Lys	325	330	335
Gln	Ala	Ala	Ala	Xaa	Gly	Xaa	Asn	Phe	Tyr	Ala	Val	Leu	Xaa	Gly	Glu	340	345	350
Glu	Leu	Gly	Arg	Xaa	Ile	Asp	Thr	Arg	Asn	Asn	Val	Pro	Asp	Ala	Gly	355	360	365
Lys	Xaa	Ser	Val	Leu	Arg	Met	Ala	Glu	Asp	Gly	Ala	Ile	Lys	Arg	Ala	370	375	380
Leu	Val	Leu	Phe	Arg	Asn	Ser	Arg	Thr	Ala	Gly	Asp	Ala	Lys	Met	Arg	385	390	395
Arg	Xaa	Ala	Gln	Ala	Glu	Trp	Arg	Phe	Ala	Thr	Arg	Gly	Phe	Asp	Glu	405	410	415
Asp	Lys	Leu	Leu	Thr	Ala	Ala	Gln	Thr	Ala	Phe	Asp	His	Gly	Phe	Tyr	420	425	430
Asp	Met	Ala	Val	Asn	Ser	Ala	Glu	Arg	Thr	Asp	Arg	Lys	Leu	Asn	Tyr	435	440	445
Thr	Leu	Arg	Tyr	Ile	Ser	Xaa	Xaa	Xaa	Asp	Thr	Val	Ile	Arg	His	Ala	450	455	460
Gln	Asn	Val	Asn	Val	Asp	Pro	Ala	Trp	Val	Tyr	Gly	Leu	Ile	Arg	Gln	465	470	475
Glu	Ser	Arg	Phe	Val	Met	Gly	Ala	Gln	Ser	Arg	Val	Gly	Ala	Gln	Gly	485	490	495
Leu	Met	Gln	Val	Met	Pro	Ala	Thr	Ala	Arg	Glu	Ile	Ala	Gly	Lys	Ile	500	505	510
Gly	Met	Asp	Ala	Ala	Gln	Leu	Tyr	Thr	Ala	Asp	Gly	Asn	Ile	Arg	Met	515	520	525
Gly	Thr	Trp	Tyr	Met	Ala	Asp	Thr	Lys	Arg	Arg	Leu	Gln	Asn	Asn	Glu	530	535	540

Val Leu Ala Thr Ala Gly Tyr Asn Ala Gly Pro Gly Arg Ala Arg Arg
545 550 555 560

Trp Gln Ala Asp Thr Pro Leu Glu Gly Ala Val Tyr Ala Glu Thr Ile
565 570 575

Pro Phe Ser Glu Thr Arg Asp Tyr Val Lys Lys Val Met Ala Asn Ala
580 585 590

Ala Tyr Tyr Ala Ser Leu Phe Gly Ala Pro His Ile Pro Leu Lys Gln
595 600 605

Arg Met Gly Ile Val Pro Ala Arg
610 615

<210> 111

<211> 342

<212> DNA

<213> Neisseria gonorrhoeae

<400> 111

atggtagaac gtaaattgac cgggtgcccat tacggtttgc gcgattgggt aatgcagcgt 60
gcgactgcgg ttattatggt gatttatacc gttgcacttt tagtggttct atttgcctg 120
cctaaagaat atccggcatg gcaggcattt tttagtcaag cttgggtaaa agtatttacc 180
caagtgagct ttatcgccgt attcttgcaac gcttgggtgg gtatccgcga tttgtggatg 240
gactatatca aacccttcgg cgtgcgtttg tttttgcagg ttgccaccat tgtctggctg 300
gtcggctgcc tcgtgtattc agttaaagtg atttgggggt aa 342

<210> 112

<211> 113

<212> PRT

<213> Neisseria gonorrhoeae

<400> 112

Met Val Glu Arg Lys Leu Thr Gly Ala His Tyr Gly Leu Arg Asp Trp
1 5 10 15

Val Met Gln Arg Ala Thr Ala Val Ile Met Leu Ile Tyr Thr Val Ala
20 25 30

Leu Leu Val Val Leu Phe Ala Leu Pro Lys Glu Tyr Pro Ala Trp Gln
35 40 45

Ala Phe Phe Ser Gln Ala Trp Val Lys Val Phe Thr Gln Val Ser Phe
50 55 60

Ile Ala Val Phe Leu His Ala Trp Val Gly Ile Arg Asp Leu Trp Met
65 70 75 80

Asp Tyr Ile Lys Pro Phe Gly Val Arg Leu Phe Leu Gln Val Ala Thr
85 90 95

Ile Val Trp Leu Val Gly Cys Leu Val Tyr Ser Val Lys Val Ile Trp
100 105 110

Gly

<210> 113
<211> 342
<212> DNA
<213> Neisseria meningitidis

<400> 113
atggtagaac gtaaattgac cggtgcccat tacggtttgc gcgattgggt gatgcaacgt 60
gcgactgcgg ttattatggt gatttatacc gttgcacttt tagtggttct attttcctg 120
cctaaagaat attcggcatg gcaggcattt tttagtcaaa cttgggtaaa agtatttacc 180

caagtgaagt tcatcgccgt attottgcac gcttgggtgg gtatccgcga tttgtggatg 240
gactatatca aacccttcgg cgtgcgtttg ttttgcagg ttgccaccat cgtttggctg 300
gtcggctgtc tcgtgtattc agttaaagtg atttgggggt aa 342

<210> 114
<211> 113
<212> PRT
<213> Neisseria meningitidis

<400> 114
Met Val Glu Arg Lys Leu Thr Gly Ala His Tyr Gly Leu Arg Asp Trp
1 5 10 15

Val Met Gln Arg Ala Thr Ala Val Ile Met Leu Ile Tyr Thr Val Ala
20 25 30

Leu Leu Val Val Leu Phe Ser Leu Pro Lys Glu Tyr Ser Ala Trp Gln
35 40 45

Ala Phe Phe Ser Gln Thr Trp Val Lys Val Phe Thr Gln Val Ser Phe
50 55 60

Ile Ala Val Phe Leu His Ala Trp Val Gly Ile Arg Asp Leu Trp Met
65 70 75 80

Asp Tyr Ile Lys Pro Phe Gly Val Arg Leu Phe Leu Gln Val Ala Thr
85 90 95

Ile Val Trp Leu Val Gly Cys Leu Val Tyr Ser Val Lys Val Ile Trp
100 105 110

Gly

<210> 115
<211> 342
<212> DNA
<213> Neisseria meningitides

<220>
<221> Misc. Feature

<222> (249)

<223> N is any nucleotide

<400> 115

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atggtagaac gtaaattgac cgggtgcccat tacggtttgc gggattgggc gatgcaacgt 60
gcgaccgcgg ttattatggt gatttatacc gttgcacttt tagtgggtct atttgctctg 120
cctaaagaat attcgcatg gcaggcattt tttagtcaaa ctggggtaaa agtatttacc 180
caagtgaagct tcatcgccgt attcttgac gcttgggtgg gtatccgcga tttgtggatg 240
gactatatna aacccttcgg cgtgcgtttg tttttgcagg ttgccaccat cgtctggctg 300
gtcggctgct tgggtgtattc aattaaagta atttgggggt aa 342
```

<210> 116

<211> 113

<212> PRT

<213> *Neisseria meningitides*

<220>

<221> UNSURE

<222> (83)

<223> Xaa is any amino acid

<400> 116

```
Met Val Glu Arg Lys Leu Thr Gly Ala His Tyr Gly Leu Arg Asp Trp
  1             5             10             15
```

```
Ala Met Gln Arg Ala Thr Ala Val Ile Met Leu Ile Tyr Thr Val Ala
      20             25             30
```

```
Leu Leu Val Val Leu Phe Ala Leu Pro Lys Glu Tyr Ser Ala Trp Gln
    35             40             45
```

```
Ala Phe Phe Ser Gln Thr Trp Val Lys Val Phe Thr Gln Val Ser Phe
    50             55             60
```

```
Ile Ala Val Phe Leu His Ala Trp Val Gly Ile Arg Asp Leu Trp Met
   65             70             75             80
```

```
Asp Tyr Xaa Lys Pro Phe Gly Val Arg Leu Phe Leu Gln Val Ala Thr
      85             90             95
```

```
Ile Val Trp Leu Val Gly Cys Leu Val Tyr Ser Ile Lys Val Ile Trp
   100            105            110
```

Gly

<210> 117

<211> 1014

<212> DNA

<213> *Neisseria meningitidis*

<400> 117

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atgttgaaac aaacgacact tttggcagct tgtaccgccg ttgccgctct gttgggcggt 60
tgcgccaccc aacagcctgc tcctgtcatt gcaggcaatt caggtagtca gaccgtatcg 120
tctgcgcggg ttacaatcc ttatggcgca acgccgtaca atgccgctcc tgccgccaac 180
```

```

gatgcgccgt atgtgccgcc cgtgcaaact gcgcgggttt attcgccctcc tgcttatgtt 240
ccgccgtctg cacctgccgt ttcgggtaca tatgttcctt cttacgcacc cgtcgacatc 300
aacgcggcga cgcatactat tgtgcgtggc gacacgggtgt acaacatttc caaacgctac 360
catatctctc aagacgattt ccgtgcgtgg aacggcatga ccgacaatac gttgagcatc 420
ggtcagattg ttaaagtcaa accggcagga tatgccgcac cgaaaaccgc agccgtagaa 480
agcaggcccc ccgtaccggc tgccgcgcaa acccctgtga aaccgcgcgc gcaaccgccc 540
gttcagtccg cgccgcaacc tgccgcgccc gctgcggaaa ataaagcggg tcccgcctcc 600
gcgcccgcgc cgcaatctcc tgccgcttcg ccttcggca cgcgttcggg cggcggcatt 660
gtttggcagc gtccgaccca aggtaaagtg gttgccgatt tcggcggcgg caacaagggt 720
gtcgatattg ccggcaatgc cggacaaccc gttttggcgg cggtgacgg caaagtgggt 780
tatgccggtt caggtttgag gggatacggg aacttggtca tcatccagca caattcctct 840
ttcctgaccg cgtacgggca caacaaaaaa ttgctggtcg gcgaagggtc gcaggtcaaa 900
cgcggtcagc aggttgcttt gatgggtaat accgatgctt ccagaacgca gcttcatttc 960
gaggtgcgtc aaaacggcaa accggttaac ccgaacagct atatcgcggt ctga 1014

```

<210> 118

<211> 337

<212> PRT

<213> Neisseria meningitidis

<400> 118

```

Met Leu Lys Gln Thr Thr Leu Leu Ala Ala Cys Thr Ala Val Ala Ala
  1                      5                      10                      15

```

```

Leu Leu Gly Gly Cys Ala Thr Gln Gln Pro Ala Pro Val Ile Ala Gly
          20                      25                      30

```

```

Asn Ser Gly Met Gln Thr Val Ser Ser Ala Pro Val Tyr Asn Pro Tyr
          35                      40                      45

```

```

Gly Ala Thr Pro Tyr Asn Ala Ala Pro Ala Ala Asn Asp Ala Pro Tyr
  50                      55                      60

```

```

Val Pro Pro Val Gln Thr Ala Pro Val Tyr Ser Pro Pro Ala Tyr Val
  65                      70                      75                      80

```

```

Pro Pro Ser Ala Pro Ala Val Ser Gly Thr Tyr Val Pro Ser Tyr Ala
          85                      90                      95

```

```

Pro Val Asp Ile Asn Ala Ala Thr His Thr Ile Val Arg Gly Asp Thr
  100                      105                      110

```

```

Val Tyr Asn Ile Ser Lys Arg Tyr His Ile Ser Gln Asp Asp Phe Arg
  115                      120                      125

```

```

Ala Trp Asn Gly Met Thr Asp Asn Thr Leu Ser Ile Gly Gln Ile Val
  130                      135                      140

```

```

Lys Val Lys Pro Ala Gly Tyr Ala Ala Pro Lys Thr Ala Ala Val Glu
  145                      150                      155                      160

```

```

Ser Arg Pro Ala Val Pro Ala Ala Ala Gln Thr Pro Val Lys Pro Ala
          165                      170                      175

```

```

Ala Gln Pro Pro Val Gln Ser Ala Pro Gln Pro Ala Ala Pro Ala Ala
  180                      185                      190

```

Glu Asn Lys Ala Val Pro Ala Pro Ala Pro Ala Pro Gln Ser Pro Ala
 195 200 205
 Ala Ser Pro Ser Gly Thr Arg Ser Val Gly Gly Ile Val Trp Gln Arg
 210 215 220
 Pro Thr Gln Gly Lys Val Val Ala Asp Phe Gly Gly Gly Asn Lys Gly
 225 230 235 240
 Val Asp Ile Ala Gly Asn Ala Gly Gln Pro Val Leu Ala Ala Ala Asp
 245 250 255
 Gly Lys Val Val Tyr Ala Gly Ser Gly Leu Arg Gly Tyr Gly Asn Leu
 260 265 270
 Val Ile Ile Gln His Asn Ser Ser Phe Leu Thr Ala Tyr Gly His Asn
 275 280 285
 Gln Lys Leu Leu Val Gly Glu Gly Gln Gln Val Lys Arg Gly Gln Gln
 290 295 300
 Val Ala Leu Met Gly Asn Thr Asp Ala Ser Arg Thr Gln Leu His Phe
 305 310 315 320
 Glu Val Arg Gln Asn Gly Lys Pro Val Asn Pro Asn Ser Tyr Ile Ala
 325 330 335

Phe

<210> 119
 <211> 1056
 <212> DNA
 <213> *Neisseria gonorrhoeae*

<400> 119
 gtgccgcccgg tgcaaaagcgc gccgggtttat acgcctcctg cttatgttcc gccgtctgca 60
 cctgccgttt cgggtacata cggttccttct tacgcacccg tcgacatcaa cgcggcgacg 120
 catactattg tgcgcggcga cacggtgtac aacatttcca aacgctacca tatctctcaa 180
 gacgatttcc gtgcgtggaa cggcatgacc gacaatacgt tgagcatcgg tcagattggt 240
 aaagtcaaac cggcaggata tgccgcaccg aaagccgcag ccgtaaaaag caggcccgcc 300
 gtaccggctg ccgcgcaacc gcccgtagag tccgcacccg tcgacattaa cgcggcgacg 360
 catactattg tgcgcggcga cacggtgtac aacatttcca aacgctacca tatctctcaa 420
 gacgatttcc gtgcgtggaa cggcatgacc gacaatatgt tgagcatcgg tcagattggt 480
 aaagtcaaac cggcaggata tgccgcaccg aaaaccgcag ccgtagaaag caggcccgcc 540
 gtaccggctg ccgtgcaaac ccctgtgaaa ccgcgccgcg aaccgcctgt gcagtccgcg 600
 ccgcaacctg ccgcgcccgc tgcggaaaat aaagcgggtc ccgcgcccgc ccgcaatct 660
 cctgccgttt cgcttccgg cacgcgttcg gtccggcgga ttgtttggca gcgtccgacg 720
 caaggtaaag tggttgccga ttccggcggc aacaacaagg gtgtcgatat tgccggtaat 780
 gcgggacagc ccgttttggc ggcggtgac ggcaaaaggg tttatgccgg ttcaggtttg 840
 aggggatacg gaaacttggc catcatccag cataattctt ctttcttgac cgcatacggg 900
 cacaacaaa aattgctggc cggcgagggg cagcagggtc aacgcgggtc gcagggttgc 960
 ttgatgggca ataccgatgc ttccagaacg cagcttcatt tcgaggtgcg tcaaaacggc 1020
 aaaccgggta acccgaacag ctatatcgcg ttctga 1056

<210> 120
<211> 509
<212> PRT
<213> Neisseria meningitidis

<400> 120

Met Ala Ala Ala Asp Lys Gln Leu Gly Ser Asp Arg Arg Ser Val Ala
1 5 10 15

Ile Ile Gly Asp Gly Ala Met Thr Ala Gly Gln Ala Phe Glu Ala Leu
20 25 30

Asn Cys Ala Gly Asp Met Asp Val Asp Leu Leu Val Val Leu Asn Asp
35 40 45

Asn Glu Met Ser Ile Ser Pro Asn Val Gly Ala Leu Pro Lys Tyr Leu
50 55 60

Ala Ser Asn Val Val Arg Asp Met His Gly Leu Leu Ser Thr Val Lys
65 70 75 80

Ala Gln Thr Gly Lys Val Leu Asp Lys Ile Pro Gly Ala Met Glu Phe
85 90 95

Ala Gln Lys Val Glu His Lys Ile Lys Thr Leu Ala Glu Glu Ala Glu
100 105 110

His Ala Lys Gln Ser Leu Ser Leu Phe Glu Asn Phe Gly Phe Arg Tyr
115 120 125

Thr Gly Pro Val Asp Gly His Asn Val Glu Asn Leu Val Asp Val Leu
130 135 140

Glu Asp Leu Arg Gly Arg Lys Gly Pro Gln Leu Leu His Val Ile Thr
145 150 155 160

Lys Lys Gly Asn Gly Tyr Lys Leu Ala Glu Asn Asp Pro Val Lys Tyr
165 170 175

His Ala Val Ala Asn Leu Pro Lys Glu Ser Ala Ala Gln Met Pro Ser
180 185 190

Glu Lys Glu Pro Lys Pro Ala Ala Lys Pro Thr Tyr Thr Gln Val Phe
195 200 205

Gly Lys Trp Leu Cys Asp Arg Ala Ala Ala Asp Ser Arg Leu Val Ala
210 215 220

Ile Thr Pro Ala Met Arg Glu Gly Ser Gly Leu Val Glu Phe Glu Gln
225 230 235 240

Arg Phe Pro Asp Arg Tyr Phe Asp Val Gly Ile Ala Glu Gln His Ala
245 250 255

Val Thr Phe Ala Gly Gly Leu Ala Cys Glu Gly Met Lys Pro Val Val
260 265 270

Ala Ile Tyr Ser Thr Phe Leu Gln Arg Ala Tyr Asp Gln Leu Val His
 275 280 285
 Asp Ile Ala Leu Gln Asn Leu Pro Val Leu Phe Ala Val Asp Arg Ala
 290 295 300
 Gly Ile Val Gly Ala Asp Gly Pro Thr His Ala Gly Leu Tyr Asp Leu
 305 310 315 320
 Ser Phe Leu Arg Cys Ile Pro Asn Met Ile Val Ala Ala Pro Ser Asp
 325 330 335
 Glu Asn Glu Cys Arg Leu Leu Leu Ser Thr Cys Tyr Gln Ala Asp Ala
 340 345 350
 Pro Ala Ala Val Arg Tyr Pro Arg Gly Thr Gly Thr Gly Val Pro Val
 355 360 365
 Ser Asp Gly Met Glu Thr Val Glu Ile Gly Lys Gly Ile Ile Arg Arg
 370 375 380
 Glu Gly Glu Lys Thr Ala Phe Ile Ala Phe Gly Ser Met Val Ala Pro
 385 390 395 400
 Ala Leu Ala Val Ala Gly Lys Leu Asn Ala Thr Val Ala Asp Met Arg
 405 410 415
 Phe Val Lys Pro Ile Asp Glu Glu Leu Ile Val Arg Leu Ala Arg Ser
 420 425 430
 His Asp Arg Ile Val Thr Leu Glu Glu Asn Ala Glu Gln Gly Gly Ala
 435 440 445
 Gly Ser Ala Val Leu Glu Val Leu Ala Lys His Gly Ile Cys Lys Pro
 450 455 460
 Val Leu Leu Leu Gly Val Ala Asp Thr Val Thr Gly His Gly Asp Pro
 465 470 475 480
 Lys Lys Leu Leu Asp Asp Leu Gly Leu Ser Ala Glu Ala Val Glu Arg
 485 490 495
 Arg Val Arg Ala Trp Leu Ser Asp Arg Asp Ala Ala Asn
 500 505

<210> 121
 <211> 1140
 <212> DNA
 <213> *Neisseria gonorrhoeae*

<400> 121
 atgagccgtt tatggttttt tgccgtaaaa aacattataa tccgccttat ttacctattg 60
 cccaaggaga cacaaatggc actcgtatcc atgcgccaac tgcttgacca cgccgccgaa 120
 aacagctacg gctgcccgc gttcaacgtc aacaacctcg aacaaatgcg cgccattatg 180
 gaagccgcgcg accaagtcaa cgcgcccgtc atcgtacagg cgagcgcagg tgcgcgcaaa 240

tacgcgggcg cgccgttttt ggcgccactg attctggcgg cagtcgaaga atttccgcac 300
 atccccgtcg tgatgcacca agaccacggc gcatcgcccg acgtgtgcca acgctccatc 360
 caactgggct tctcctccgt gatgatggac ggctctttgc tcgaagacgg caaaaccctt 420
 tcttcttacg aatacaacgt caacgccacc cgtaccgtcg tcaacttctc ccacgcctgc 480
 ggcgtgtccg tcgaaggcga aatcggcgta ttgggcaacc tcgaaaccgg cgaagcaggc 540
 gaagaagacg gagtgggcgc ggcaggcaaa ctctcacacg accaaatgct caccagcggt 600
 gaagatgccg tgcgtttcgt taaagatacc ggcgttgacg cattggcgat tgccgtcggc 660
 accagccacg gcgcatacaa attcaccctg cgcgccacag gcgacgtatt gcgtatcgac 720
 cgcatacaagg aaatccacca agccctgccc aatacacaca tcgtgatgca cggctccagc 780
 tccgttccgc aagaatggct gaaagtcatt aacgaatacg gcggcaatat cggcgaaacc 840
 tacggcgtgc cggttgaaga aatcgtcgaa ggcatacaac acggcgtgcg caaagtcaac 900
 atcgataccg acctgcgcct cgcttccacc ggcgcggtac gccgctacct tgccgaaaac 960
 ccgtccgact ttgatccgcg caaatacttg ggcaaaacca ttgaagcgat gaagcaaatc 1020
 tgccctgacc gttatcttgc gttcggttgc gaaggtcagg caggcaaaat caaacctgtt 1080
 tcgttggaag aaatggcaag ccgttatgcc aagggcgaat tgaaccaaata cgtcaaataa 1140

<210> 122
 <211> 379
 <212> PRT
 <213> *Neisseria gonorrhoeae*

<400> 122
 Met Ser Arg Leu Trp Phe Phe Ala Val Lys Asn Ile Ile Ile Arg Leu
 1 5 10 15
 Ile Tyr Leu Leu Pro Lys Glu Thr Gln Met Ala Leu Val Ser Met Arg
 20 25 30
 Gln Leu Leu Asp His Ala Ala Glu Asn Ser Tyr Gly Leu Pro Ala Phe
 35 40 45
 Asn Val Asn Asn Leu Glu Gln Met Arg Ala Ile Met Glu Ala Ala Asp
 50 55 60
 Gln Val Asn Ala Pro Val Ile Val Gln Ala Ser Ala Gly Ala Arg Lys
 65 70 75 80
 Tyr Ala Gly Ala Pro Phe Leu Arg His Leu Ile Leu Ala Ala Val Glu
 85 90 95
 Glu Phe Pro His Ile Pro Val Val Met His Gln Asp His Gly Ala Ser
 100 105 110
 Pro Asp Val Cys Gln Arg Ser Ile Gln Leu Gly Phe Ser Ser Val Met
 115 120 125
 Met Asp Gly Ser Leu Leu Glu Asp Gly Lys Thr Pro Ser Ser Tyr Glu
 130 135 140
 Tyr Asn Val Asn Ala Thr Arg Thr Val Val Asn Phe Ser His Ala Cys
 145 150 155 160
 Gly Val Ser Val Glu Gly Glu Ile Gly Val Leu Gly Asn Leu Glu Thr
 165 170 175
 Gly Glu Ala Gly Glu Glu Asp Gly Val Gly Ala Ala Gly Lys Leu Ser

180	185	190
His Asp Gln Met Leu Thr Ser Val Glu Asp Ala Val Arg Phe Val Lys		
195	200	205
Asp Thr Gly Val Asp Ala Leu Ala Ile Ala Val Gly Thr Ser His Gly		
210	215	220
Ala Tyr Lys Phe Thr Arg Pro Pro Thr Gly Asp Val Leu Arg Ile Asp		
225	230	235
Arg Ile Lys Glu Ile His Gln Ala Leu Pro Asn Thr His Ile Val Met		
	245	250
His Gly Ser Ser Ser Val Pro Gln Glu Trp Leu Lys Val Ile Asn Glu		
	260	265
Tyr Gly Gly Asn Ile Gly Glu Thr Tyr Gly Val Pro Val Glu Glu Ile		
	275	280
Val Glu Gly Ile Lys His Gly Val Arg Lys Val Asn Ile Asp Thr Asp		
	290	295
Leu Arg Leu Ala Ser Thr Gly Ala Val Arg Arg Tyr Leu Ala Glu Asn		
305	310	315
Pro Ser Asp Phe Asp Pro Arg Lys Tyr Leu Gly Lys Thr Ile Glu Ala		
	325	330
Met Lys Gln Ile Cys Leu Asp Arg Tyr Leu Ala Phe Gly Cys Glu Gly		
	340	345
Gln Ala Gly Lys Ile Lys Pro Val Ser Leu Glu Lys Met Ala Ser Arg		
	355	360
Tyr Ala Lys Gly Glu Leu Asn Gln Ile Val Lys		
370	375	

<210> 123

<211> 771

<212> DNA

<213> Neisseria meningitidis

<400> 123

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atgagctggt tatgggtttt tgetgtaaaa aacattataa tccgccttat ttacctattg 60
cccaaggaga cacaaatggc actcgtatcc atgcgccaac tgcttgatca tgctgccgaa 120
wacagctacg gcytgccggc gttcaacgtc aacaacctcg wacagatgcg cgccatcatg 180
gaggctgcag accaagtcca cgcctccgtc atcgtacagg cgagtgccgg tgcgcgcaaa 240
tatgcgggtg cgccgttttt acgccacctg attttggcgg ctgtcgaagt atttccacac 300
atccccgtcg tcatgcacca agaccacggc gcatcaccgg acgtgtgcca acgctccatc 360
caactgggct tctcctctgt aatgatggac ggctcgtga tggaagacgg caaaacctct 420
tcttcttacg aatacaacgt caacgccaca cgtaccgtgg ttaacttctc ccacgcttgc 480
ggcgtatccg ttgaaggcga aatcggcgta ttgggcaacc tcgaaaccgg cgatgcaggc 540
gaagaagacg gtgtaggcgc agtgggcaaa ctttccacg accaaatgct gaccagcgct 600
gaagatgccg tatgtttcgt taaagatacc ggcggtgacg cattggctat tgccgtcggc 660
accagccacg gcgcatacaa attcaccgct ccgccacag gcgatgtatt acgtatcgac 720

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cgcatcaaag aaatccacca agccctgccc aatacacaca tcgtgatgca c

771

<210> 124
<211> 257
<212> PRT
<213> Neisseria meningitides

<220>
<221> UNSURE
<222> (41)
<223> Xaa is any amino acid

<220>
<221> UNSURE
<222> (54)
<223> Xaa is any amino acid

<400> 124
Met Ser Cys Leu Trp Phe Phe Ala Val Lys Asn Ile Ile Ile Arg Leu
1 5 10 15
Ile Tyr Leu Leu Pro Lys Glu Thr Gln Met Ala Leu Val Ser Met Arg
20 25 30
Gln Leu Leu Asp His Ala Ala Glu Xaa Ser Tyr Gly Leu Pro Ala Phe
35 40 45
Asn Val Asn Asn Leu Xaa Gln Met Arg Ala Ile Met Glu Ala Ala Asp
50 55 60
Gln Val Asp Ala Pro Val Ile Val Gln Ala Ser Ala Gly Ala Arg Lys
65 70 75 80
Tyr Ala Gly Ala Pro Phe Leu Arg His Leu Ile Leu Ala Ala Val Glu
85 90 95
Val Phe Pro His Ile Pro Val Val Met His Gln Asp His Gly Ala Ser
100 105 110
Pro Asp Val Cys Gln Arg Ser Ile Gln Leu Gly Phe Ser Ser Val Met
115 120 125
Met Asp Gly Ser Leu Met Glu Asp Gly Lys Thr Pro Ser Ser Tyr Glu
130 135 140
Tyr Asn Val Asn Ala Thr Arg Thr Val Val Asn Phe Ser His Ala Cys
145 150 155 160
Gly Val Ser Val Glu Gly Glu Ile Gly Val Leu Gly Asn Leu Glu Thr
165 170 175
Gly Asp Ala Gly Glu Glu Asp Gly Val Gly Ala Val Gly Lys Leu Ser
180 185 190
His Asp Gln Met Leu Thr Ser Val Glu Asp Ala Val Cys Phe Val Lys

195

200

205

Asp Thr Gly Val Asp Ala Leu Ala Ile Ala Val Gly Thr Ser His Gly
 210 215 220

Ala Tyr Lys Phe Thr Arg Pro Pro Thr Gly Asp Val Leu Arg Ile Asp
 225 230 235 240

Arg Ile Lys Glu Ile His Gln Ala Leu Pro Asn Thr His Ile Val Met
 245 250 255

His

<210> 125

<211> 1140

<212> DNA

<213> Neisseria meningitidis

<400> 125

atgagccgtt tatggttttt tgccgcaaaa aacattataa tccgccttat ttacctattg 60
 cccaaggaga cacaaatggc actcgtatcc atgcgccaac tgcttgatca tgctgcccga 120
 aacagctacg gcctgcccgc gttcaacgtc aacaacctcg aacaaatgcg cgccattatg 180
 gaagccgccg accaagtcaa cgcgcccgtc atcgtacagg cgagcgcagg tgccgcgcaa 240
 tacgcggggc cgccgttttt gcgccacctg attttggcgg ctgtcgaaga atttccgcac 300
 atccccgtcg tgatgcacca agaccacggc gcatcgcccg acgtgtgcca acgctccatc 360
 caactgggct tttcctccgt gatgatggac ggctcgctga tggaagacgg caaaacccct 420
 tcttcttatg aatacaacgt caacgccacc cgtaccgtgg ttaatttctc ccacgcctgc 480
 ggcgtatccg ttgaaggcga aatcggcgta ttgggcaacc tcgaaactgg cgaagccggc 540
 gaagaagacg gtgtaggcgc agtgggcaaa ctttcccacg accaaatgct caccagcgtc 600
 gaagatgccg tgcgtttcgt taaagatacc ggcgttgacg cattggcgat tgccgtcggc 660
 accagccacg gcgcgtacaa attcaccgtt ccgcccacag gcgacgtgtt gcgtatcgac 720
 cgcatacaag aaatccacca agccctgccc aatacacaca tcgtgatgca cggctccagc 780
 tccgttccgc aagaatggct gaaagtcac aacgaatacg gcggcaatat cggcgaaacc 840
 tacggcgtgc cggttgaaga aatcgtcgaa ggcatacaac acggcgtgcg taaagtcaac 900
 atcgataccg acttgcgcct tgcttccacc ggcgcggtac gccgctacct tgccgaaaac 960
 ccgtccgact tcgatccgcg caaatatttg agcaaaacca ttgaagcgat gaagcaaatc 1020
 tgccctgacc gctacctgcg gttcgggttc gaaggtcagg caggcaaaat caaacccggt 1080
 tccttggaag aaatggcaaa ccgttatgcc aagggcgaat tgaaccaa at cgtcaaataa 1140

<210> 126

<211> 379

<212> PRT

<213> Neisseria meningitidis

<400> 126

Met Ser Arg Leu Trp Phe Phe Ala Ala Lys Asn Ile Ile Ile Arg Leu
 1 5 10 15

Ile Tyr Leu Leu Pro Lys Glu Thr Gln Met Ala Leu Val Ser Met Arg
 20 25 30

Gln Leu Leu Asp His Ala Ala Glu Asn Ser Tyr Gly Leu Pro Ala Phe
 35 40 45

Asn	Val	Asn	Asn	Leu	Glu	Gln	Met	Arg	Ala	Ile	Met	Glu	Ala	Ala	Asp	50	55	60	
Gln	Val	Asn	Ala	Pro	Val	Ile	Val	Gln	Ala	Ser	Ala	Gly	Ala	Arg	Lys	65	70	75	80
Tyr	Ala	Gly	Ala	Pro	Phe	Leu	Arg	His	Leu	Ile	Leu	Ala	Ala	Val	Glu	85	90	95	
Glu	Phe	Pro	His	Ile	Pro	Val	Val	Met	His	Gln	Asp	His	Gly	Ala	Ser	100	105	110	
Pro	Asp	Val	Cys	Gln	Arg	Ser	Ile	Gln	Leu	Gly	Phe	Ser	Ser	Val	Met	115	120	125	
Met	Asp	Gly	Ser	Leu	Met	Glu	Asp	Gly	Lys	Thr	Pro	Ser	Ser	Tyr	Glu	130	135	140	
Tyr	Asn	Val	Asn	Ala	Thr	Arg	Thr	Val	Val	Asn	Phe	Ser	His	Ala	Cys	145	150	155	160
Gly	Val	Ser	Val	Glu	Gly	Glu	Ile	Gly	Val	Leu	Gly	Asn	Leu	Glu	Thr	165	170	175	
Gly	Glu	Ala	Gly	Glu	Glu	Asp	Gly	Val	Gly	Ala	Val	Gly	Lys	Leu	Ser	180	185	190	
His	Asp	Gln	Met	Leu	Thr	Ser	Val	Glu	Asp	Ala	Val	Arg	Phe	Val	Lys	195	200	205	
Asp	Thr	Gly	Val	Asp	Ala	Leu	Ala	Ile	Ala	Val	Gly	Thr	Ser	His	Gly	210	215	220	
Ala	Tyr	Lys	Phe	Thr	Arg	Pro	Pro	Thr	Gly	Asp	Val	Leu	Arg	Ile	Asp	225	230	235	240
Arg	Ile	Lys	Glu	Ile	His	Gln	Ala	Leu	Pro	Asn	Thr	His	Ile	Val	Met	245	250	255	
His	Gly	Ser	Ser	Ser	Val	Pro	Gln	Glu	Trp	Leu	Lys	Val	Ile	Asn	Glu	260	265	270	
Tyr	Gly	Gly	Asn	Ile	Gly	Glu	Thr	Tyr	Gly	Val	Pro	Val	Glu	Glu	Ile	275	280	285	
Val	Glu	Gly	Ile	Lys	His	Gly	Val	Arg	Lys	Val	Asn	Ile	Asp	Thr	Asp	290	295	300	
Leu	Arg	Leu	Ala	Ser	Thr	Gly	Ala	Val	Arg	Arg	Tyr	Leu	Ala	Glu	Asn	305	310	315	320
Pro	Ser	Asp	Phe	Asp	Pro	Arg	Lys	Tyr	Leu	Ser	Lys	Thr	Ile	Glu	Ala	325	330	335	
Met	Lys	Gln	Ile	Cys	Leu	Asp	Arg	Tyr	Leu	Ala	Phe	Gly	Cys	Glu	Gly	340	345	350	

Gln Ala Gly Lys Ile Lys Pro Val Ser Leu Glu Lys Met Ala Asn Arg
 355 360 365

Tyr Ala Lys Gly Glu Leu Asn Gln Ile Val Lys
 370 375

<210> 127
 <211> 816
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 127
 atgctgaagc cgtgttttgg atacagtgcc tgtgcggcgg cgttgccctgc gcggacttcg 60
 agcagcaggc gttgcgtgcc ttcgggcaga tgtgcgtacc aatattcgag cagggcgccgac 120
 gcaacgcccc gtcggcgcca ttcgggcgcg gtggcaatca ggtgcagttc ggattcgctc 180
 ggaggttctt gccaaacgat aaaggcgcca atcctgccgt ctttttccgc aaggaaaacc 240
 tgttcggacg gcgaaacaag cgcggactca aattggcggt gcgtccacgc ggacgggttg 300
 cagacgggat cgagcgcgcc cagtgcggcg cagtcggacg gtgaggctgg gcggatgttc 360
 atgttcgtgc cttccgttcc gcctgttctt tggcagtcag ggcgattttg ttgcggacgt 420
 agagcagttc ggcggtgtgc gcgccagttg cgggatagcc gccgccgagg gcgagcgcca 480
 gaaaatcggc ggcggtcggc atatcgggtt tgccagagaa gggcgacggc tttccagtg 540
 cgaacgcact gccgatgccg tctgaaaaga cgtacccctc ggggagggca atgtctgccg 600
 ccctaccgac ttgataatcg ctcaaaccgc ggcggttcag cgtgtcgaac cacgcataaa 660
 acacttcgcc catacgcgcg tccgcagcgg cgagtatgca gctttgcggc ggcggcagcg 720
 aggcggcgcc atcgagcgtg gggatgccga ttaaaggcgt gtcgaacggc gttgccaaac 780
 cttgcgccac gccgatgccg atacgcagtc cggtaa 816

<210> 128
 <211> 271
 <212> PRT
 <213> Neisseria gonorrhoeae

<400> 128
 Met Leu Lys Pro Cys Leu Val Tyr Ser Ala Cys Ala Ala Ala Leu Pro
 1 5 10 15
 Ala Arg Thr Ser Ser Ser Arg Arg Cys Val Pro Ser Gly Arg Cys Ala
 20 25 30
 Tyr Gln Tyr Ser Ser Arg Ala Asp Ala Thr Pro Arg Arg Arg His Ser
 35 40 45
 Gly Ala Val Ala Ile Arg Cys Ser Ser Asp Ser Ser Gly Arg Phe Cys
 50 55 60
 Gln Thr Ile Lys Ala Ala Ile Leu Pro Ser Phe Ser Ala Arg Lys Thr
 65 70 75 80
 Cys Ser Asp Gly Glu Thr Ser Ala Asp Ser Asn Trp Arg Cys Val His
 85 90 95
 Ala Asp Gly Leu Gln Thr Val Ser Ser Ala Ala Ser Ala Ala Gln Ser
 100 105 110
 Asp Gly Glu Ala Gly Arg Met Phe Met Phe Val Pro Ser Val Pro Pro

115	120	125
Val Leu Trp Gln Ser Gly Arg Phe Cys Cys Gly Arg Arg Ala Val Arg		
130	135	140
Arg Val Pro Arg Gln Leu Arg Asp Ser Arg Arg Arg Gly Arg Ala Arg		
145	150	155
Glu Asn Arg Arg Arg Ser Ala Tyr Arg Val Cys Leu Arg Arg Ala Asp		
	165	170
Gly Phe Pro Val Arg Thr His Cys Arg Cys Arg Leu Lys Arg Arg Thr		
	180	185
Pro Arg Gly Gly Gln Cys Leu Pro Pro Tyr Arg Leu Asp Asn Arg Ser		
	195	200
Asn Gly Gly Gly Ser Ala Cys Arg Thr Thr His Lys Thr Leu Arg Pro		
	210	215
Tyr Ala Arg Pro Gln Arg Arg Val Cys Ser Phe Ala Ala Ala Ala Ala		
225	230	235
Arg Arg Arg His Arg Ala Trp Gly Cys Arg Leu Lys Ala Cys Arg Thr		
	245	250
Ala Leu Pro Asn Leu Ala Pro Arg Arg Cys Arg Tyr Ala Val Arg		
	260	265
		270

<210> 129
 <211> 815
 <212> DNA
 <213> Neisseria meningitidis

<400> 129
 atgctgaagc cgtgcgccgt gtacagtgcc tgtgcggcgg tgttgccctgc acggacttcg 60
 agcagcaggc gttgcgtgtc ttcgggcaga tgtgtgaacc aatattcgag cagggcggac 120
 gcaattcctt ggcggcggca ttcgggcgcg gtggcaatca ggtgcagttc ggattcgtcg 180
 ggcaggttct gccaaacgat aaaggcggca atcccgcgtc tttttccgca aggaaaacct 240
 gttcggacgg cgaaaccagt gcggactcaa attggcggtg cgtccatgcg gacggggttg 300
 agacggcatc gagtgcggcc agctcctcac aatcggcaca aacggcacgg cggatgttca 360
 cgggcgcgct ctccgttcgg cctgttcttt ggcatcagg gcgattttgt tgcggacgta 420
 gagcaaaccg gcgtgtgcgg catggacggc aggataaccg cccttggtg ccaatgcgag 480
 aaagtcggcg gcagtcggca tatccggtct gcctgagaac ggcgagcgtt cttccagcgc 540
 gaacgcgctg cctatgccgt ctgaaaaggc gcatccctcc ggcagccgga tgtctgccgc 600
 ccgcccgaacc tgataatcgc tcaaacgggtg gcagttcagc gtatcgaacc atgcataaaa 660
 cacttcgccc atacgagcgt ccgtagcggc aaggatgcag ctttgcggcg gcggcagcga 720
 ggcggcggca tcgagcgagg gtacgccgat taagggggta tcaaacggcg ttgccaacc 780
 ctgagctaca ccgatgccga tacgcagtcc ggtaa 815

<210> 130
 <211> 270
 <212> PRT
 <213> Neisseria meningitides

<220>

<221> UNSURE

<222> (73)

<223> Xaa is any amino acid

<400> 130

Met Leu Lys Pro Cys Ala Val Tyr Ser Ala Cys Ala Ala Val Leu Pro
1 5 10 15

Ala Arg Thr Ser Ser Ser Arg Arg Cys Val Ser Ser Gly Arg Cys Val
20 25 30

Asn Gln Tyr Ser Ser Arg Ala Asp Ala Ile Pro Trp Arg Arg His Ser
35 40 45

Gly Ala Val Ala Ile Arg Cys Ser Ser Asp Ser Ser Gly Arg Phe Cys
50 55 60

Gln Thr Ile Lys Ala Ala Ile Pro Xaa Ser Phe Ser Ala Arg Lys Thr
65 70 75 80

Cys Ser Asp Gly Glu Thr Ser Ala Asp Ser Asn Trp Arg Cys Val His
85 90 95

Ala Asp Gly Leu Gln Thr Ala Ser Ser Ala Ala Ser Ser Ser Gln Ser
100 105 110

Ala Gln Thr Ala Arg Arg Met Phe Thr Gly Ala Leu Ser Val Arg Pro
115 120 125

Val Leu Trp Gln Ser Gly Arg Phe Cys Cys Gly Arg Arg Ala Asn Arg
130 135 140

Arg Val Arg His Gly Arg Gln Asp Asn Arg Pro Trp Leu Pro Met Arg
145 150 155 160

Glu Ser Arg Arg Gln Ser Ala Tyr Pro Val Cys Leu Arg Thr Ala Glu
165 170 175

Leu Leu Pro Ala Arg Thr Arg Cys Leu Cys Arg Leu Lys Arg Arg Ile
180 185 190

Pro Pro Ala Ala Gly Cys Leu Pro Pro Ala Arg Pro Asp Asn Arg Ser
195 200 205

Asn Gly Gly Ser Ser Ala Tyr Arg Thr Met His Lys Thr Leu Arg Pro
210 215 220

Tyr Glu Arg Pro Arg Gln Gly Cys Ser Phe Ala Ala Ala Ala Arg
225 230 235 240

Arg Arg His Arg Ala Arg Val Arg Arg Leu Arg Gly Tyr Gln Thr Ala
245 250 255

Leu Pro Asn Pro Glu Leu His Arg Cys Arg Tyr Ala Val Arg
260 265 270

<210> 131
 <211> 816
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 131
 atgctgaagc cgtgcgccgt gtacagtgcc tgtgcgccgg tgttgccctgc acggacttcg 60
 agcagcaggc gttgctgtgc ttcgggcaga tgtgtgaacc aatattcgag cagggcggac 120
 gcaattcctt ggcgggcgca ttcgggcgcg gtggcaatca ggtgcagttc ggattcgtcg 180
 ggcaggttct gccaaacgat aaaggcggca atcccgccgt ctttttcgcg aaggaaaacc 240
 tgttcggacg gcgaaaccag tgcggactca aattggcgtt gcgtccacgc ggacgggttg 300
 cagacggcat cgagcgcggc gagtgcggcg caatcgcat aaacggcgcg gcggatgttc 360
 acaggcgcgc cctccgttcc gcctgttctt tggcagtcaa ggcgattttg ttgctggacgt 420
 agagcagctc ggctgtgtgc gcagcgacgg cgggaaaacc gccttcagcc gccagattga 480
 ggaagtcggc ggcggtcggc atatcggtt tgcctgagaa gggcggacgg ttttcacgcg 540
 cgaacgcatt gccgatgccg tctgaaaagg cgcctcctc cggcagccgg atgtctgccg 600
 cccgaccgac ctgataatcg ctcaaaccgc ggcggttcag cgtgtcgaac catgcataaa 660
 acacttcgcc catacgtgcg tccgcagcgg caaggatgca gctttgcggc ggcggcagcg 720
 aggcggcggc atcgagcgag ggtacgccga ttaaaggagt atcaaaccgc gttgccaaac 780
 cttgcgccac gccgatgccg atacgcagtc ccgtaa 816

<210> 132
 <211> 269
 <212> PRT
 <213> *Neisseria meningitidis*

<400> 132
 Met Leu Lys Pro Cys Ala Val Tyr Ser Ala Cys Ala Ala Val Leu Pro
 1 5 10 15
 Ala Arg Thr Ser Ser Ser Arg Arg Cys Val Ser Ser Gly Arg Cys Val
 20 25 30
 Asn Gln Tyr Ser Ser Arg Ala Asp Ala Ile Pro Trp Arg Arg His Ser
 35 40 45
 Gly Ala Val Ala Ile Arg Cys Ser Ser Asp Ser Ser Gly Arg Phe Cys
 50 55 60
 Gln Thr Ile Lys Ala Ala Ile Pro Pro Ser Phe Ser Ala Arg Lys Thr
 65 70 75 80
 Cys Ser Asp Gly Glu Thr Ser Ala Asp Ser Asn Trp Arg Cys Val His
 85 90 95
 Ala Asp Gly Leu Gln Thr Ala Ser Ser Ala Ala Ser Ala Ala Gln Ser
 100 105 110
 Ala Thr Ala Arg Arg Met Phe Thr Gly Ala Pro Ser Val Pro Pro Val
 115 120 125
 Leu Trp Gln Ser Arg Arg Phe Cys Cys Gly Arg Arg Ala Ala Arg Arg
 130 135 140

Val Pro Gln Arg Arg Arg Glu Asn Arg Leu Gln Pro Pro Asp Gly Ser
145 150 155 160

Arg Arg Arg Ser Ala Tyr Arg Val Cys Leu Arg Arg Ala Asp Gly Phe
165 170 175

Pro Ala Arg Thr His Cys Arg Cys Arg Leu Lys Arg Arg Ile Leu Pro
180 185 190

Ala Ala Gly Cys Leu Pro Pro Asp Arg Pro Asp Asn Arg Ser Asn Gly
195 200 205

Gly Gly Ser Ala Cys Arg Thr Met His Lys Thr Leu Arg Pro Tyr Val
210 215 220

Arg Pro Gln Arg Gln Gly Cys Ser Phe Ala Ala Ala Ala Arg Arg
225 230 235 240

Arg His Arg Ala Arg Val Arg Arg Leu Lys Glu Tyr Gln Thr Ala Leu
245 250 255

Pro Asn Leu Ala Pro Arg Arg Cys Arg Tyr Ala Val Pro
260 265

<210> 133
<211> 687
<212> DNA
<213> Neisseria meningitidis

<400> 133
atgtctgaagc cgtgcgccgt gtacagtgcc tgtgcgccgg tgttgccctgc acggacttcg 60
agcagcaggc gttgcgtgtc ttcgggcaga tgtgtgaacc aatattcgag cagggcggac 120
gcaattcctt ggcgccggca ttcgggcgcg gtggcaatca ggtgcagttc ggattcgtcg 180
ggcaggttct gccaaacgat aaaggcggca atcccgccgt ctttttccgc aaggaaaacc 240
tgttcggacg gcgaaaccag tgcggactca aattggcgtt gcgtccatgc ggacgggttg 300
cagacggcat cgagtgcggc cagctcctca caatcggcac aaacggcacg gcggatgttc 360
acgggcgcgc tctccgttcg gectgttctt tggcagtcag ggcgattttg ttgcggacgt 420
agagcaaaccc ggcggtgtgc gcatggacgg caggataacc gcccttggtt gccaatgcga 480
gaaagtcggc ggcagtcggc atatccggtc tgctgagaa cggcggagct tcttcacgcg 540
cgaacgcgct gcctatgccg tctgaaaagg cgcattccctc cggcagccgg atgtctgccg 600
cccggccgac ctgataatcg ctcaaaccgt ggcagttcag cgtatcgaac catgcataaa 660
aacttcgcc catacagcg tccgtag 687

<210> 134
<211> 228
<212> PRT
<213> Neisseria meningitidis

<400> 134
Met Leu Lys Pro Cys Ala Val Tyr Ser Ala Cys Ala Ala Val Leu Pro
1 5 10 15

Ala Arg Thr Ser Ser Ser Arg Arg Cys Val Ser Ser Gly Arg Cys Val
20 25 30

Asn Gln Tyr Ser Ser Arg Ala Asp Ala Ile Pro Trp Arg Arg His Ser
 35 40 45
 Gly Ala Val Ala Ile Arg Cys Ser Ser Asp Ser Ser Gly Arg Phe Cys
 50 55 60
 Gln Thr Ile Lys Ala Ala Ile Pro Pro Ser Phe Ser Ala Arg Lys Thr
 65 70 75 80
 Cys Ser Asp Gly Glu Thr Ser Ala Asp Ser Asn Trp Arg Cys Val His
 85 90 95
 Ala Asp Gly Leu Gln Thr Ala Ser Ser Ala Ala Ser Ser Ser Gln Ser
 100 105 110
 Ala Gln Thr Ala Arg Arg Met Phe Thr Gly Ala Leu Ser Val Arg Pro
 115 120 125
 Val Leu Trp Gln Ser Gly Arg Phe Cys Cys Gly Arg Arg Ala Asn Arg
 130 135 140
 Arg Val Arg His Gly Arg Gln Asp Asn Arg Pro Trp Leu Pro Met Arg
 145 150 155 160
 Glu Ser Arg Arg Gln Ser Ala Tyr Pro Val Cys Leu Arg Thr Ala Glu
 165 170 175
 Leu Leu Pro Ala Arg Thr Arg Cys Leu Cys Arg Leu Lys Arg Arg Ile
 180 185 190
 Pro Pro Ala Ala Gly Cys Leu Pro Pro Ala Arg Pro Asp Asn Arg Ser
 195 200 205
 Asn Gly Gly Ser Ser Ala Tyr Arg Thr Met His Lys Thr Leu Arg Pro
 210 215 220
 Tyr Glu Arg Pro
 225

<210> 135
 <211> 642
 <212> DNA
 <213> *Neisseria gonorrhoeae*

<400> 135
 atgactgatt tccgccaaga tttcctcaaa ttctccctcg cccaaaatgt tttgaaattc 60
 ggccaattta ccaccaaagc cggacggcgg tcgcctatt tcttcaatgc cggcctcttc 120
 aacgacggcg cgtccacgct gcaactggca aaattctatg cacaatccat cattgaaagc 180
 ggcacccgat tcgatatgct gttcggcccc gcctacaaag gcattatattt ggcggcggca 240
 accgcgatga tgctggcggg aaaaggcgtg aacgtcccgt ttgcctacaa ccgcaaagaa 300
 gccaaagacc gcggcgaagg cggcgtgttg gtcggcgcgc cgcttaaagg gcgcgtgctg 360
 attatcgacg acgtgatttc cgccggcaca tccgtacgcg aatcaatcaa actgattgaa 420
 gcggagggtg caacccccgc cgggtgtcgc atcgcgctcg accgcatgga aaaaggcacg 480
 ggtaaattgt ccgccgttca ggaagtggaa aaacaatacg gcctgcccg cgccccatc 540
 gccagcctga acgatttggt tctctgttg caaaacaacc ccgaattcgg acagttcctc 600

gaaccctgcc gcacctaccg ccggcagtagc ggcgtagaat aa

642

<210> 136

<211> 213

<212> PRT

<213> Neisseria gonorrhoeae

<400> 136

Met Thr Asp Phe Arg Gln Asp Phe Leu Lys Phe Ser Leu Ala Gln Asn
1 5 10 15

Val Leu Lys Phe Gly Glu Phe Thr Thr Lys Ala Gly Arg Arg Ser Pro
20 25 30

Tyr Phe Phe Asn Ala Gly Leu Phe Asn Asp Gly Ala Ser Thr Leu Gln
35 40 45

Leu Ala Lys Phe Tyr Ala Gln Ser Ile Ile Glu Ser Gly Ile Arg Phe
50 55 60

Asp Met Leu Phe Gly Pro Ala Tyr Lys Gly Ile Ile Leu Ala Ala Ala
65 70 75 80

Thr Ala Met Met Leu Ala Glu Lys Gly Val Asn Val Pro Phe Ala Tyr
85 90 95

Asn Arg Lys Glu Ala Lys Asp Arg Gly Glu Gly Gly Val Leu Val Gly
100 105 110

Ala Pro Leu Lys Gly Arg Val Leu Ile Ile Asp Asp Val Ile Ser Ala
115 120 125

Gly Thr Ser Val Arg Glu Ser Ile Lys Leu Ile Glu Ala Glu Gly Ala
130 135 140

Thr Pro Ala Gly Val Ala Ile Ala Leu Asp Arg Met Glu Lys Gly Thr
145 150 155 160

Gly Lys Leu Ser Ala Val Gln Glu Val Glu Lys Gln Tyr Gly Leu Pro
165 170 175

Val Ala Pro Ile Ala Ser Leu Asn Asp Leu Phe Ile Leu Leu Gln Asn
180 185 190

Asn Pro Glu Phe Gly Gln Phe Leu Glu Pro Val Arg Thr Tyr Arg Arg
195 200 205

Gln Tyr Gly Val Glu
210

<210> 137

<211> 642

<212> DNA

<213> Neisseria meningitidis

<400> 137

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atgaccgatt tccgccaaga tttcctcaaa ttctccctcg cccaaaatgt tttgaaattc 60
ggcgaattta ccaccaaggc aggacggcgg tcgccctatt tcttcaatgc cggcctcttt 120
aacgacggct tgtccacgct gcaactggca aaattttacg cacaatccat cattgaaagc 180
ggcatccgat tcgatatgct gttcgggtccc gcctacaaag gcattatattt ggcgggcgga 240
accgcgatga tgctggcgga aaaaggcgtg aacgtcccgt ttgcctacaa ccgcaaagaa 300
gccaaagacc acggcgaagg cggcgtgttg gtcggcgcg cgttaaagg gcgcgtgctg 360
attatcgacg acgtgatttc cgcgggcaca tccgtacgag aatcgatcaa actgattgaa 420
gcggagggtg caacccccgc cgggtgtcgcc atcgcgctcg atcgcatgga aaaaggcacg 480
ggtgaattga gcgcggttca ggaagtggar aaacaatacg gkctgcccgt cgcgccatc 540
gccagcctga acgatttggt tattctgttg caaaacaacc ccgaattcgg acagttcctc 600
gaaccctcc gagcctaccg tcggcagtac ggcgtagaat aa 642
```

<210> 138

<211> 213

<212> PRT

<213> *Neisseria meningitidis*

<400> 138

```
Met Thr Asp Phe Arg Gln Asp Phe Leu Lys Phe Ser Leu Ala Gln Asn
  1              5              10              15
```

```
Val Leu Lys Phe Gly Glu Phe Thr Thr Lys Ala Gly Arg Arg Ser Pro
      20              25              30
```

```
Tyr Phe Phe Asn Ala Gly Leu Phe Asn Asp Gly Leu Ser Thr Leu Gln
    35              40              45
```

```
Leu Ala Lys Phe Tyr Ala Gln Ser Ile Ile Glu Ser Gly Ile Arg Phe
    50              55              60
```

```
Asp Met Leu Phe Gly Pro Ala Tyr Lys Gly Ile Ile Leu Ala Ala Ala
    65              70              75              80
```

```
Thr Ala Met Met Leu Ala Glu Lys Gly Val Asn Val Pro Phe Ala Tyr
      85              90              95
```

```
Asn Arg Lys Glu Ala Lys Asp His Gly Glu Gly Gly Val Leu Val Gly
    100              105              110
```

```
Ala Pro Leu Lys Gly Arg Val Leu Ile Ile Asp Asp Val Ile Ser Ala
    115              120              125
```

```
Gly Thr Ser Val Arg Glu Ser Ile Lys Leu Ile Glu Ala Glu Gly Ala
    130              135              140
```

```
Thr Pro Ala Gly Val Ala Ile Ala Leu Asp Arg Met Glu Lys Gly Thr
    145              150              155              160
```

```
Gly Glu Leu Ser Ala Val Gln Glu Val Glu Lys Gln Tyr Gly Leu Pro
      165              170              175
```

```
Val Ala Pro Ile Ala Ser Leu Asn Asp Leu Phe Ile Leu Leu Gln Asn
    180              185              190
```

```
Asn Pro Glu Phe Gly Gln Phe Leu Glu Pro Val Arg Ala Tyr Arg Arg
```

195

200

205

Gln Tyr Gly Val Glu
210

<210> 139

<211> 642

<212> DNA

<213> Neisseria meningitidis

<400> 139

```

atgaccgatt tccgccaaga tttcctcaaa ttctccctcg cccaaaatgt tttgaaattc 60
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aacgacggct tgtccacgct gcaactggca aaattttacg cacaatccat cattgaaagc 180
ggcatccgat tcgatatgct gttcggcccc gcctacaaag gcattatttt ggcggcggca 240
accgcgatga tgctggcgga aaaaggcgtg aacgtcccgt ttgcctacaa ccgcaaagaa 300
gccaaagacc acggcgaagg cggcgtgttg gtccggcgcg cgcttaaagg gcgcgtgctg 360
attatcgacg acgtgatttc cgccggcaca tccgtacgcg aatcgatcaa actgattgaa 420
gcggaggggt caacccccgc cgggtgtcgc atcgcgctcg accgcatgga aaaaggcacg 480
ggtgaattga gcgcggttca ggaagtggaa aaacaatacg gcctgccgtg cgccccatc 540
gccagcctga acgatttggt tattctgttg caaaacaacc ccgaattcgg acagttcctc 600
gaaccgctcc gagcctaccg tcggcagtac ggcgtagaat aa 642

```

<210> 140

<211> 213

<212> PRT

<213> Neisseria meningitidis

<400> 140

```

Met Thr Asp Phe Arg Gln Asp Phe Leu Lys Phe Ser Leu Ala Gln Asn
 1              5              10              15

Val Leu Lys Phe Gly Glu Phe Thr Thr Lys Ala Gly Arg Arg Ser Pro
      20              25              30

Tyr Phe Phe Asn Ala Gly Leu Phe Asn Asp Gly Leu Ser Thr Leu Gln
 35              40              45

Leu Ala Lys Phe Tyr Ala Gln Ser Ile Ile Glu Ser Gly Ile Arg Phe
 50              55              60

Asp Met Leu Phe Gly Pro Ala Tyr Lys Gly Ile Ile Leu Ala Ala Ala
 65              70              75              80

Thr Ala Met Met Leu Ala Glu Lys Gly Val Asn Val Pro Phe Ala Tyr
      85              90              95

Asn Arg Lys Glu Ala Lys Asp His Gly Glu Gly Gly Val Leu Val Gly
 100              105              110

Ala Pro Leu Lys Gly Arg Val Leu Ile Ile Asp Asp Val Ile Ser Ala
 115              120              125

Gly Thr Ser Val Arg Glu Ser Ile Lys Leu Ile Glu Ala Glu Gly Ala
 130              135              140

```

Thr Pro Ala Gly Val Ala Ile Ala Leu Asp Arg Met Glu Lys Gly Thr
145 150 155 160

Gly Glu Leu Ser Ala Val Gln Glu Val Glu Lys Gln Tyr Gly Leu Pro
165 170 175

Val Ala Pro Ile Ala Ser Leu Asn Asp Leu Phe Ile Leu Leu Gln Asn
180 185 190

Asn Pro Glu Phe Gly Gln Phe Leu Glu Pro Val Arg Ala Tyr Arg Arg
195 200 205

Gln Tyr Gly Val Glu
210

<210> 141

<211> 492

<212> DNA

<213> Neisseria gonorrhoeae

<400> 141

atgccgtccg aaccacctgc cgcttcagac ggcacaaac cgacacacac cgagaaaaca 60
tcatgcccgc ctgtttctgt ccgcactgca aaacccgcct ctgggtcaaa gaaacccagc 120
tcaacgtcgc ccaaggttc gtcgtctgcc aaaaatgcga agggctgttt aaagccaaag 180
accatctggc aagcacgaaa gaacctatat tcaacgattg gcccgagct gtttcgggat 240
gtcaaaactcg tccaccgcat cggcacgcac gccattagca agaaacagat gtcccgcgac 300
gaaatcgccg atatctctcaa cggcgggtaca accctgcaag atacgccgcc cgcaaccgcc 360
gtgcccgcac ctgccgccgc accgcaggtt tccgtaccgc ccgcccgta ggaagggctc 420
aactggacta ttgcaaccct gttcgcaact atcgtctctca ttatgcagct ttcctacctc 480
ttcatcctat ga 492

<210> 142

<211> 163

<212> PRT

<213> Neisseria gonorrhoeae

<400> 142

Met Pro Ser Glu Pro Pro Ala Ala Ser Asp Gly Ile Lys Pro Thr His
1 5 10 15

Thr Glu Lys Thr Ser Cys Pro Pro Val Ser Val Arg Thr Ala Lys Pro
20 25 30

Ala Ser Gly Ser Lys Lys Pro Ser Ser Thr Ser Pro Lys Ala Ser Ser
35 40 45

Ser Ala Lys Asn Ala Lys Gly Cys Leu Lys Pro Lys Thr Ile Trp Gln
50 55 60

Ala Arg Lys Asn Leu Tyr Ser Thr Ile Gly Pro Lys Leu Phe Arg Asp
65 70 75 80

Val Lys Leu Val His Arg Ile Gly Thr His Ala Ile Ser Lys Lys Gln
85 90 95

Met Ser Arg Asp Glu Ile Ala Asp Ile Leu Asn Gly Gly Thr Thr Leu
100 105 110

His Asp Thr Pro Pro Ala Thr Ala Ala Ala Pro Ala Ala Ala Pro
115 120 125

Gln Val Ser Val Pro Pro Ala Arg Gln Glu Gly Leu Asn Trp Thr Ile
130 135 140

Ala Thr Leu Phe Ala Leu Ile Val Leu Ile Met Gln Leu Ser Tyr Leu
145 150 155 160

Phe Ile Leu

<210> 143
<211> 513
<212> DNA
<213> Neisseria meningitides

<220>
<221> Misc. feature
<222> (133)....(237)
<223> N is any nucleotide

<400> 143
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ccatgcccgc ctgtttctgc cccactgca aaaccctct ctgggtcaaa gaaacccaac 120
tcaatgtcgc cgnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 180
nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnccc 240
gaggctgttt cggatgtcaa actcgttcac cgtatcggca cgcgcgcat cggcaagaaa 300
cagatttccc gtgacgaaat cgcgcgcac ctcaacggcg gtacaacca gcccgatatt 360
cgcgccgcaa cgcgcgcac cctgctgcc gcaccgcagg ttaccgtacc gcccgccgcg 420
ccgcccgtc aggatgggtt caactggacg attgcaaccc tgtttgccct tatcgtcctc 480
attatgcagc ttctctacct cgtcatccta tga 513

<210> 144
<211> 170
<212> PRT
<213> Neisseria meningitides

<220>
<221> UNSURE
<222> (45)....(79)
<223> Xaa is any amino acid

<400> 144
Met Pro Ser Glu Pro Pro Tyr Ala Ser Asp Gly Ile Lys Pro Asp Thr
1 5 10 15

His Glu Glu Ile Pro Cys Pro Pro Val Ser Ala Pro Thr Ala Lys Pro
20 25 30

Val Ser Gly Ser Lys Lys Pro Asn Ser Met Ser Pro Xaa Xaa Xaa Xaa

35	40	45
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa		
50	55	60
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Pro		
65	70	75 80
Glu Ala Val Ser Asp Val Lys Leu Val His Arg Ile Gly Thr Arg Ala		
85	90	95
Ile Gly Lys Lys Gln Ile Ser Arg Asp Glu Ile Ala Gly Ile Leu Asn		
100	105	110
Gly Gly Thr Thr Gln Pro Asp Ile Pro Pro Ala Thr Ala Ala Thr Pro		
115	120	125
Ala Ala Ala Pro Gln Val Thr Val Pro Pro Ala Ala Pro Ala Arg Gln		
130	135	140
Asp Gly Phe Asn Trp Thr Ile Ala Thr Leu Phe Ala Leu Ile Val Leu		
145	150	155 160
Ile Met Gln Leu Ser Tyr Leu Val Ile Leu		
165	170	

<210> 145
 <211> 497
 <212> DNA
 <213> Neisseria meningitidis

<400> 145
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 ccatgcccg cgtgttctgc cccactgca aaaccgctct ctgggtcaaa gaaaccaaac 120
 tcaatgtcgc ccaaggcttc gtcgtctgcc aaaaatgcga aggaatgttt aaagccaaag 180
 accatctggc aagcacgaaa gaaccatata tcaacgattt gccgaagct gtttcggatg 240
 tcaaactcgt tcaaccgcatc ggcacgagcg ccatcggcaa gaaacagatt tcccgtgacg 300
 aaatcgccgg catcctcaac ggcggcacaa ccagcccgga tatccgccc gcaaccgccc 360
 ccaccctgc tgccgcaccg caggttaccg taccgcccgc cgcgcccgc cgtcaggatg 420
 ggttcaactg gacgattgca accctgtttg cccttatcgt cctcattatg cagctttcct 480
 acctcgtcat cctatga 497

<210> 146
 <211> 165
 <212> PRT
 <213> Neisseria meningitides

<220>
 <221> UNSURE
 <222> (74)
 <223> Xaa is any amino acid

<400> 146
 Met Pro Ser Glu Pro Pro Tyr Ala Ser Asp Gly Ile Lys Pro Asp Thr
 1 5 10 15

His Glu Glu Ile Pro Cys Pro Pro Val Ser Ala Pro Thr Ala Lys Pro
20 25 30

Val Ser Gly Ser Lys Lys Pro Asn Ser Met Ser Pro Lys Ala Ser Ser
35 40 45

Ser Ala Lys Asn Ala Lys Glu Cys Leu Lys Pro Lys Thr Ile Trp Gln
50 55 60

Ala Arg Lys Asn Pro Tyr Ser Thr Ile Xaa Pro Glu Ala Val Ser Asp
65 70 75 80

Val Lys Leu Val His Arg Ile Gly Thr Ser Ala Ile Gly Lys Lys Gln
85 90 95

Ile Ser Arg Asp Glu Ile Ala Gly Ile Leu Asn Gly Gly Thr Thr Gln
100 105 110

Pro Asp Ile Pro Pro Ala Thr Ala Ala Thr Pro Ala Ala Ala Pro Gln
115 120 125

Val Thr Val Pro Pro Ala Ala Pro Ala Arg Gln Asp Gly Phe Asn Trp
130 135 140

Thr Ile Ala Thr Leu Phe Ala Leu Ile Val Leu Ile Met Gln Leu Ser
145 150 155 160

Tyr Leu Val Ile Leu
165

<210> 147

<211> 1311

<212> DNA

<213> Neisseria gonorrhoeae

<400> 147

atgaacgcgc cgcacagctt tgtcgccac ttccgcgaag ccgcccccta catccgcca 60
atgcgcggca cgacactggt cgcgggcata gacggccgcc tgctcgaag cggcacctta 120
aataagctcg ccgcgcacat cgggctgttg tcgcaactgg gcatccgact cgtcctcatc 180
cacggcgcgt accacttcct cgaccgcctc gccgcgcgc aaggccgcac gccgcattat 240
tgccgggggtt tgcgcgttac cgacgaaacc tcgctcggac aggcgcagca gtttgccggc 300
accgtccgca gccgttttga agccgcattg tgccgcagcg tttcaggatt cgcgcgcgcg 360
ccttcctgcc cgtcgttata gggcaacttc ctgaccgcc gtccgatggg cgtgattgac 420
ggaaccgata tggaatacgc gggggttatc cgaaaaccg acaccgccgc cctccgtttc 480
caactcgacg cgggcaatat cgtctggatg ccgcgcctcg ggcattccta cggcggcaaa 540
accttcaatc tcgatatggt gcaggccgcc gcttcctcg ccgtctcgct tcaggccgaa 600
aaactcgttt acctgacctt ttcagacggc atttccgcc ccgacggcac gctcgcgcaa 660
accctctcgg cacaggaagc gcaatcgctg gcggaacacg ccgccagcga aaccgcacga 720
ctgatttcgt ccgcggttgc cgcgctcgaa ggccgcgtgc atcgcgtcca aatcctcaac 780
ggggccgcgc acggcagcct gctgcaagaa ctcttcccc gcaacggcat cggcacgtcc 840
attgcaaag aagccttcgt ctccatccgg caggcgaca gcggcgacat cccgcacatc 900
gccgccctca tccgcccgtc ggaagaacag ggctcctat tgcaccgcag ccgcgaatac 960
ctcgaaaacc acatttcoga attttccatc ctcgaaacacg acggcgacct gtacggctgt 1020
gccgcactca aaacctttgc cgaagccgat tgccgcgaaa tcgcctgcct tgccgtctcg 1080
ccgcaggcac aggcagggcg ctacggcgaa cgctgcttg cccacattat cgataaggcg 1140

cgcgcatag gcataagcag gctgttcgca ctgtccacaa ataccggcga atggtttgcc 1200
gaacgcggct ttcagacggc atcggaagac gagctgcccg aaacgcggcg caaagactac 1260
cgcagcaacg gacgaaacc gcatattctg gtgcgtcgcc tgcaccgctg a 1311

<210> 148
<211> 436
<212> PRT
<213> Neisseria gonorrhoeae

<400> 148
Met Asn Ala Pro Asp Ser Phe Val Ala His Phe Arg Glu Ala Ala Pro
1 5 10 15
Tyr Ile Arg Gln Met Arg Gly Thr Thr Leu Val Ala Gly Ile Asp Gly
20 25 30
Arg Leu Leu Glu Gly Gly Thr Leu Asn Lys Leu Ala Ala Asp Ile Gly
35 40 45
Leu Leu Ser Gln Leu Gly Ile Arg Leu Val Leu Ile His Gly Ala Tyr
50 55 60
His Phe Leu Asp Arg Leu Ala Ala Ala Gln Gly Arg Thr Pro His Tyr
65 70 75 80
Cys Arg Gly Leu Arg Val Thr Asp Glu Thr Ser Leu Gly Gln Ala Gln
85 90 95
Gln Phe Ala Gly Thr Val Arg Ser Arg Phe Glu Ala Ala Leu Cys Gly
100 105 110
Ser Val Ser Gly Phe Ala Arg Ala Pro Ser Val Pro Leu Val Ser Gly
115 120 125
Asn Phe Leu Thr Ala Arg Pro Met Gly Val Ile Asp Gly Thr Asp Met
130 135 140
Glu Tyr Ala Gly Val Ile Arg Lys Thr Asp Thr Ala Ala Leu Arg Phe
145 150 155 160
Gln Leu Asp Ala Gly Asn Ile Val Trp Met Pro Pro Leu Gly His Ser
165 170 175
Tyr Gly Gly Lys Thr Phe Asn Leu Asp Met Val Gln Ala Ala Ala Ser
180 185 190
Val Ala Val Ser Leu Gln Ala Glu Lys Leu Val Tyr Leu Thr Leu Ser
195 200 205
Asp Gly Ile Ser Arg Pro Asp Gly Thr Leu Ala Glu Thr Leu Ser Ala
210 215 220
Gln Glu Ala Gln Ser Leu Ala Glu His Ala Ala Ser Glu Thr Arg Arg
225 230 235 240
Leu Ile Ser Ser Ala Val Ala Ala Leu Glu Gly Gly Val His Arg Val


```

ggaaccgata tggaaatagc gggcggttat cgcaaaaccg acaccgcgc cctccgtttc 480
caactcgacg cgggcaatat cgtctggctg ccgccgctcg gacattccta cagcggcaag 540
accttctatc tcgatatgct tcaaaccgcc gcctccgccg ccgtctcgct tcaggccgaa 600
aaactcgttt acctgacctt ttcagacggc atttccgcc ccgacggcac gctcgccgaa 660
accctctcgg cacaggaagc gcaatcgctg gcggaacacg ccggcgggca aacgcgacgg 720
ctgatttcgt ccgccgaact cttcacccgc aacggcatcg gcacgtccat tgccaaagaa 780
gccttcgtct ccatccggca rgcgaywgg gcgacatccc gcacatcgcc gccctcatcc 840
gcccgcctgga agaacagggc atcctgctgc accgcascgc gaatacctcg aaaaccacat 900
ttccgaattt tccatcctcg aacacgacgg caacctgtac ggttgcgcgg ccctgaaaac 960
ctttgccgaa gccgattgog gcgaaatcgc ctgccttgcc gtctcgccgc agcacaggac 1020
ggcggctacg gcgaacgcnt gcttgccac attatcgata aggcgcgcgg cataggcata 1080
agcaggctgt tcgactgtc cacaataacc ggcgaatggt ttgccgaacg cggctttcag 1140
acggcatcgg aagacgagtt gcccgaacg cggcgcaaag actaccgcag caacggacgg 1200
aactcgcata ttctggtacg tcgcctgcac cgctga 1236

```

```

<210> 150
<211> 412
<212> PRT
<213> Neisseria meningitides

```

```

<220>
<221> UNSURE
<222> (270)...(271)
<223> Xaa is any amino acid

```

```

<220>
<221> UNSURE
<222> (293)
<223> Xaa is any amino acid

```

```

<220>
<221> UNSURE
<222> (339)
<223> Xaa is any amino acid

```

```

<220>
<221> UNSURE
<222> (348)
<223> Xaa is any amino acid

```

```

<400> 150
Met Ser Ala Pro Asp Leu Phe Val Ala His Phe Arg Glu Ala Val Pro
 1           5           10          15

Tyr Ile Arg Gln Met Arg Gly Lys Thr Leu Val Ala Gly Ile Asp Asp
 20           25           30

Arg Leu Leu Glu Gly Asp Thr Leu Asn Lys Leu Ala Ala Asp Ile Gly
 35           40           45

Leu Leu Ser Gln Leu Gly Ile Arg Leu Val Leu Ile His Gly Ala Arg
 50           55           60

His Phe Leu Asp Arg His Ala Ala Ala Gln Gly Arg Thr Pro His Tyr
 65           70           75           80

```

Cys	Arg	Gly	Leu	Arg	Val	Thr	Asp	Glu	Thr	Ser	Leu	Glu	Gln	Ala	Gln		
				85					90					95			
Gln	Phe	Ala	Gly	Thr	Val	Arg	Ser	Arg	Phe	Glu	Ala	Ala	Leu	Cys	Gly		
				100					105					110			
Ser	Val	Ser	Gly	Phe	Ala	Arg	Ala	Pro	Ser	Val	Pro	Leu	Val	Ser	Gly		
				115					120					125			
Asn	Phe	Leu	Thr	Ala	Arg	Pro	Ile	Gly	Val	Ile	Asp	Gly	Thr	Asp	Met		
				130					135					140			
Glu	Tyr	Ala	Gly	Val	Ile	Arg	Lys	Thr	Asp	Thr	Ala	Ala	Leu	Arg	Phe		
145					150					155					160		
Gln	Leu	Asp	Ala	Gly	Asn	Ile	Val	Trp	Leu	Pro	Pro	Leu	Gly	His	Ser		
				165					170					175			
Tyr	Ser	Gly	Lys	Thr	Phe	Tyr	Leu	Asp	Met	Leu	Gln	Thr	Ala	Ala	Ser		
				180					185					190			
Ala	Ala	Val	Ser	Leu	Gln	Ala	Glu	Lys	Leu	Val	Tyr	Leu	Thr	Leu	Ser		
				195					200					205			
Asp	Gly	Ile	Ser	Arg	Pro	Asp	Gly	Thr	Leu	Ala	Glu	Thr	Leu	Ser	Ala		
				210					215					220			
Gln	Glu	Ala	Gln	Ser	Leu	Ala	Glu	His	Ala	Gly	Gly	Gln	Thr	Arg	Arg		
225					230					235					240		
Leu	Ile	Ser	Ser	Ala	Glu	Leu	Phe	Thr	Arg	Asn	Gly	Ile	Gly	Thr	Ser		
				245					250					255			
Ile	Ala	Lys	Glu	Ala	Phe	Val	Ser	Ile	Arg	Gln	Ala	His	Xaa	Xaa	Asp		
				260					265					270			
Ile	Pro	His	Ile	Ala	Ala	Leu	Ile	Arg	Pro	Leu	Glu	Glu	Gln	Gly	Ile		
				275					280					285			
Leu	Leu	His	Arg	Xaa	Arg	Glu	Tyr	Leu	Glu	Asn	His	Ile	Ser	Glu	Phe		
				290					295					300			
Ser	Ile	Leu	Glu	His	Asp	Gly	Asn	Leu	Tyr	Gly	Cys	Ala	Ala	Leu	Lys		
305					310					315					320		
Thr	Phe	Ala	Glu	Ala	Asp	Cys	Gly	Glu	Ile	Ala	Cys	Leu	Ala	Val	Ser		
				325					330					335			
Pro	Gln	Xaa	Gln	Asp	Gly	Gly	Tyr	Gly	Glu	Arg	Xaa	Leu	Ala	His	Ile		
				340					345					350			
Ile	Asp	Lys	Ala	Arg	Gly	Ile	Gly	Ile	Ser	Arg	Leu	Phe	Ala	Leu	Ser		
				355					360					365			
Thr	Asn	Thr	Gly	Glu	Trp	Phe	Ala	Glu	Arg	Gly	Phe	Gln	Thr	Ala	Ser		
				370					375					380			

Glu Asp Glu Leu Pro Glu Thr Arg Arg Lys Asp Tyr Arg Ser Asn Gly
 385 390 395 400

Arg Asn Ser His Ile Leu Val Arg Arg Leu His Arg
 405 410

<210> 151
 <211> 1311
 <212> DNA
 <213> Neisseria meningitidis

<400> 151
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 atgcgcggca aaacgctggt cgccggcata gacgaccgcc tgctcgaagg tgatacctta 120
 aacaagttcg ccgccgacat cgggcttttg tcgcaactgg gcatcaggct cgtcctcatc 180
 cagggcgcgc gccacttctt cgaccgccac gccgcgcgc aaggccgcac gccgcattat 240
 tgccggggct tgcgcgttac cgacgaaacc tcgctcgaac aggcgcagca gtttgccggc 300
 accgtccgca gccgttttga agccgcattg tgcggcagcg tttccgggtt cgcgcgcgcg 360
 ccttcctgac cgctcgatc gggcaacttc ctgaccgcc gtccgatagg tgtgattgac 420
 ggaaccgata tggaatacgc gggcgttatc cgcaaaacgc acaccgccgc cctccgtttc 480
 caactcgacg cgggcaatat cgtctggctg ccgccgctcg gacattccta cagcggcaag 540
 accttccatc tcgatatgct tcaaaccgcc gcctccgctg ccgtctcgct tcaggccgaa 600
 aaactcgttt acctgacctt ttcagacggc atttccgcc ccgacggcac gctcgccgta 660
 accctctcgg cacaggaagc gcaatcgctg gcggaacacg ccggcggcga aacgcgacgg 720
 ctgatttcgt ccgccgttgc cgcgctcgaa ggcgcgctgc atcgcgctca aatcctcaac 780
 ggagccgccg acggcagcct gctgcaagaa ctcttcaccc gcaacggcat cggcacgtcc 840
 attgccaagg aagccttcgt ctccatccgg caggcgcaca gcggcgacat cccgcacatt 900
 gccgcctca tccgcccgct ggaagaacag ggcatcctgc tgcaccgcag ccgcgaatac 960
 ctgaaaaacc acatttccga attttccatc ctcgaaacag acggcaacct gtacggttgc 1020
 gccgcctga aaacctttgc cgaagccgat tgcggcgaaa tcgcctgcct tgccgtctcg 1080
 ccgcaggcac aggcggcgcg ctacggcgaa cgctgcttg ccacattat cgataaggcg 1140
 cgcggcatag gcataagcag gctgttcgca ctgtccacaa ataccggcga atgggttgcc 1200
 gaacgcggct ttcagacggc atcggaagac gagttgcccg aaacgcggcg caaagactac 1260
 cgcagcaacg gacggaactc gcatattctg gtgcgctgcc tgcaccgctg a 1311

<210> 152
 <211> 436
 <212> PRT
 <213> Neisseria meningitidis

<400> 152
 Met Ile Val Pro Asp Leu Phe Val Ala His Phe Arg Glu Ala Ala Pro
 1 5 10 15
 Tyr Ile Arg Gln Met Arg Gly Lys Thr Leu Val Ala Gly Ile Asp Asp
 20 25 30
 Arg Leu Leu Glu Gly Asp Thr Leu Asn Lys Phe Ala Ala Asp Ile Gly
 35 40 45
 Leu Leu Ser Gln Leu Gly Ile Arg Leu Val Leu Ile His Gly Ala Arg
 50 55 60
 His Phe Leu Asp Arg His Ala Ala Ala Gln Gly Arg Thr Pro His Tyr
 65 70 75 80

Cys	Arg	Gly	Leu	Arg	Val	Thr	Asp	Glu	Thr	Ser	Leu	Glu	Gln	Ala	Gln		
				85							90						
											95						
Gln	Phe	Ala	Gly	Thr	Val	Arg	Ser	Arg	Phe	Glu	Ala	Ala	Leu	Cys	Gly		
			100					105					110				
Ser	Val	Ser	Gly	Phe	Ala	Arg	Ala	Pro	Ser	Val	Pro	Leu	Val	Ser	Gly		
			115					120					125				
Asn	Phe	Leu	Thr	Ala	Arg	Pro	Ile	Gly	Val	Ile	Asp	Gly	Thr	Asp	Met		
		130					135					140					
Glu	Tyr	Ala	Gly	Val	Ile	Arg	Lys	Thr	Asp	Thr	Ala	Ala	Leu	Arg	Phe		
145					150					155							
Gln	Leu	Asp	Ala	Gly	Asn	Ile	Val	Trp	Leu	Pro	Pro	Leu	Gly	His	Ser		
			165					170					175				
Tyr	Ser	Gly	Lys	Thr	Phe	His	Leu	Asp	Met	Leu	Gln	Thr	Ala	Ala	Ser		
			180					185					190				
Val	Ala	Val	Ser	Leu	Gln	Ala	Glu	Lys	Leu	Val	Tyr	Leu	Thr	Leu	Ser		
		195					200					205					
Asp	Gly	Ile	Ser	Arg	Pro	Asp	Gly	Thr	Leu	Ala	Val	Thr	Leu	Ser	Ala		
210					215					220							
Gln	Glu	Ala	Gln	Ser	Leu	Ala	Glu	His	Ala	Gly	Gly	Glu	Thr	Arg	Arg		
225					230					235							
Leu	Ile	Ser	Ser	Ala	Val	Ala	Ala	Leu	Glu	Gly	Gly	Val	His	Arg	Val		
			245					250					255				
Gln	Ile	Leu	Asn	Gly	Ala	Ala	Asp	Gly	Ser	Leu	Leu	Gln	Glu	Leu	Phe		
			260					265					270				
Thr	Arg	Asn	Gly	Ile	Gly	Thr	Ser	Ile	Ala	Lys	Glu	Ala	Phe	Val	Ser		
		275					280					285					
Ile	Arg	Gln	Ala	His	Ser	Gly	Asp	Ile	Pro	His	Ile	Ala	Ala	Leu	Ile		
290					295					300							
Arg	Pro	Leu	Glu	Glu	Gln	Gly	Ile	Leu	Leu	His	Arg	Ser	Arg	Glu	Tyr		
305					310					315							
Leu	Glu	Asn	His	Ile	Ser	Glu	Phe	Ser	Ile	Leu	Glu	His	Asp	Gly	Asn		
			325					330					335				
Leu	Tyr	Gly	Cys	Ala	Ala	Leu	Lys	Thr	Phe	Ala	Glu	Ala	Asp	Cys	Gly		
			340					345					350				
Glu	Ile	Ala	Cys	Leu	Ala	Val	Ser	Pro	Gln	Ala	Gln	Asp	Gly	Gly	Tyr		
		355					360					365					
Gly	Glu	Arg	Leu	Leu	Ala	His	Ile	Ile	Asp	Lys	Ala	Arg	Gly	Ile	Gly		
370					375					380							

Ile Ser Arg Leu Phe Ala Leu Ser Thr Asn Thr Gly Glu Trp Phe Ala
385 390 395 400

Glu Arg Gly Phe Gln Thr Ala Ser Glu Asp Glu Leu Pro Glu Thr Arg
405 410 415

Arg Lys Asp Tyr Arg Ser Asn Gly Arg Asn Ser His Ile Leu Val Arg
420 425 430

Arg Leu His Arg
435

<210> 153

<211> 465

<212> DNA

<213> Neisseria gonorrhoeae

<400> 153

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gatatgatcc gttatccgct gctgtccgcc ggttcaagtt ggacggacga ataccggcaat 180
ccgcagaaat acgaagcctg caaacgccgg ctgggcgaat tgtcgccgta tcacaatctt 240
tcagacggca tcgattatcc gccgcactc attaccacca gcctcagcga cgaccgcgtc 300
catcccgcgc acgcgctcaa attctacgcc aaactgcgcg aaacctcgcc gcaatcttgg 360
ctctactcgc ctgacggcgg cggccatacc ggcaacggca cccaacgcga atccgccgac 420
aaactcgctt gcgtgttgct gtttttgaaa gaatttttgg gataa 465

<210> 154

<211> 154

<212> PRT

<213> Neisseria gonorrhoeae

<400> 154

Met Ser Ser Pro Lys His Ile Gly Leu Gln Gly Gly Ser Asn Gly Gly
1 5 10 15

Leu Ile Thr Ala Ala Ala Phe Val Arg Glu Pro Gln Ser Ile Gly Ala
20 25 30

Leu Val Cys Glu Val Pro Leu Thr Asp Met Ile Arg Tyr Pro Leu Leu
35 40 45

Ser Ala Gly Ser Ser Trp Thr Asp Glu Tyr Gly Asn Pro Gln Lys Tyr
50 55 60

Glu Ala Cys Lys Arg Arg Leu Gly Glu Leu Ser Pro Tyr His Asn Leu
65 70 75 80

Ser Asp Gly Ile Asp Tyr Pro Pro Ala Leu Ile Thr Thr Ser Leu Ser
85 90 95

Asp Asp Arg Val His Pro Ala His Ala Leu Lys Phe Tyr Ala Lys Leu
100 105 110

Arg Glu Thr Ser Pro Gln Ser Trp Leu Tyr Ser Pro Asp Gly Gly Gly
115 120 125

His Thr Gly Asn Gly Thr Gln Arg Glu Ser Ala Asp Lys Leu Ala Cys
130 135 140

Val Leu Leu Phe Leu Lys Glu Phe Leu Gly
145 150

<210> 155

<211> 465

<212> DNA

<213> *Neisseria meningitidis*

<400> 155

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gacatgatcc gttatccgct gctctccgcc gggtcaagct ggacagacga atacggcaat 180
ccgcaaaaat acgaagtctg caaacgccgg ttgggcgaat tgcgcgcgta tcacaatctt 240
tcagacggca tcgattatcc gccgcgctc attaccacca gcctgtccga cgatcgcgtc 300
catcccgcgc acgcgctcaa gttctacgcc aaactgcgcg aaacctccgc gcaatcttgg 360
ctctactcgc ctgacggcgg cggccatacc ggcaacggca cccaacgcga atccgccgac 420
gaactcgctt gcgtcttgct gtttttgaaa gagtttttgg gctaa 465

<210> 156

<211> 154

<212> PRT

<213> *Neisseria meningitidis*

<400> 156

Ile Ser Ser Pro Glu His Ile Gly Leu Gln Gly Gly Ser Asn Gly Gly
1 5 10 15

Leu Ile Thr Ala Ala Ala Phe Val Arg Glu Pro Gln Ser Ile Gly Ala
20 25 30

Leu Val Cys Glu Val Pro Leu Thr Asp Met Ile Arg Tyr Pro Leu Leu
35 40 45

Ser Ala Gly Ser Ser Trp Thr Asp Glu Tyr Gly Asn Pro Gln Lys Tyr
50 55 60

Glu Val Cys Lys Arg Arg Leu Gly Glu Leu Ser Pro Tyr His Asn Leu
65 70 75 80

Ser Asp Gly Ile Asp Tyr Pro Pro Ala Leu Ile Thr Thr Ser Leu Ser
85 90 95

Asp Asp Arg Val His Pro Ala His Ala Leu Lys Phe Tyr Ala Lys Leu
100 105 110

Arg Glu Thr Ser Ala Gln Ser Trp Leu Tyr Ser Pro Asp Gly Gly Gly
115 120 125

His Thr Gly Asn Gly Thr Gln Arg Glu Ser Ala Asp Glu Leu Ala Cys

130

135

140

Val Leu Leu Phe Leu Lys Glu Phe Leu Gly
145 150

<210> 157

<211> 465

<212> DNA

<213> Neisseria meningitidis

<400> 157

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gccgccttcg tgcgcgaacc gcaaagcata ggcgcgctgg tgtgcgaagt gccgctgacc 120
gacatgatcc gttatccgct gctctccgcc ggttcaagct ggacagacga atacggcaat 180
ccgcaaaaat acgaagtctg caaacgccgg ttgggcgaat tgtcgccgta tcacaatctt 240
tcagacggca tcgattatcc gcccgcgctc attaccacca gcctgtccga cgatcgcgctc 300
catcccgccc acgcgctcaa gttctacgcc aaactgcgcg aaacctcgcc gcaatcttgg 360
ctctactcgc ctgacggcgg cgccataacc ggcaacggca cgcagcgcga agccgccgac 420
gaactcgccct gcgtgttgct gtttttgaag gagtttttgg gctaa 465

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<210> 158

<211> 154

<212> PRT

<213> Neisseria meningitidis

<400> 158

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Ile Ser Ser Pro Glu His Ile Gly Leu Gln Gly Gly Ser Asn Gly Gly
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Leu Ile Thr Ala Ala Ala Phe Val Arg Glu Pro Gln Ser Ile Gly Ala
      20           25           30

Leu Val Cys Glu Val Pro Leu Thr Asp Met Ile Arg Tyr Pro Leu Leu
      35           40           45

Ser Ala Gly Ser Ser Trp Thr Asp Glu Tyr Gly Asn Pro Gln Lys Tyr
      50           55           60

Glu Val Cys Lys Arg Arg Leu Gly Glu Leu Ser Pro Tyr His Asn Leu
      65           70           75           80

Ser Asp Gly Ile Asp Tyr Pro Pro Ala Leu Ile Thr Thr Ser Leu Ser
      85           90           95

Asp Asp Arg Val His Pro Ala His Ala Leu Lys Phe Tyr Ala Lys Leu
      100           105           110

Arg Glu Thr Ser Pro Gln Ser Trp Leu Tyr Ser Pro Asp Gly Gly Gly
      115           120           125

His Thr Gly Asn Gly Thr Gln Arg Glu Ala Ala Asp Glu Leu Ala Cys
      130           135           140

Val Leu Leu Phe Leu Lys Glu Phe Leu Gly

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<210> 159
 <211> 2016
 <212> DNA
 <213> *Neisseria gonorrhoeae*

<400> 159
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 aacttcgctg ctgaagcgaa tgccgaaacg cgcgcgcgtt ttttaaaca cgaacaggcg 120
 cgcgcacttt cagacggcat tttgaatcaa atgcaggaca cgcgcgagat tccgttttgt 180
 caggaacacc gcgcgcggat gtaccatttc catcagaatg cggaatatcc gaagggcgtg 240
 taccgcatgt gtacggcggc gacctaccgt tccggctatc ccgagtggaa aatcctgttt 300
 tcggtggcgg atttcgatga gttgctcggc gacgatgtgt atttggcggc cgtgtcgcac 360
 ttggtggagc agcccaaccg cgcgctgctg actttgaaca aatcgggcgg cgatacggcg 420
 tatacgctgg aagtggattt ggaagcaggg gaattggtag agggcggttt tcactttccg 480
 gcaggcaaaa accatgtgtc gtggcgcgat gaaaacagcg tgtgggtgtg tccggcttgg 540
 gacgaacgcc agttgaccga atcgggctat ccgcgcgaag tgtggcttgt ggaacgcggc 600
 aagagtttcg aggaaagcct gccggcgtag caaatcgata aaggcgcgat gatggtaaac 660
 gcgtggcgtt acctcgatcc gcagggttcg ccgattgatt tgattgaagc gtcggacggt 720
 ttttacacca agacgtattt gcagggtgtc tccgaaggcg gggcgaaacc gttgaacctg 780
 cctaattgatt gcgatgttgt cggctatctg gcgggacatc ttttgctgac gctgcgcaag 840
 gactggcacc gcgcgaacca aagctatccg agtggcgcgt tgggtggcgg gaaactgaat 900
 cggggcgaaac tcggggcggc gcagcttttg tttgcgccc atgaaacgca ggcaattgaa 960
 agcgtggaaa cgaccaagcg ttttgtggtg gcaagcctgc tggagaatgt acaaggccgt 1020
 ctgaaagcgt ggcggtttgc cgacagcaaa tggcaggaag ccgagttgcc gcacctgcc 1080
 tcgggcgcgt tggaatgac cgaccaaccg tggggcgggc acgtggttta tcttgccgcc 1140
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 gtcattgcgc tccagccgca gcagtttgtt tcagacggca tcgaagtgcg gcagttttgg 1260
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 gacacgccga ccttagtcta tgcttacgga ggtttcggca ttctgaatt gccgcattat 1380
 ctgggcagcg tcggcaataa ttggctggaa gagggcaatg cctttgtatt ggcaaacatc 1440
 cgcggcggcg gagaattcgg ccgcgcgtgg catcaggcgg cgcagggaat cagcaaacac 1500
 aaaagcgttg atgatttgtt ggcagtcgtg cgtgatttgt ccgaacgcgg catgagttcg 1560
 cccaaacaca tcggcttgca gggcggcagc aacggcggcc tgattaccgc cgccgccttc 1620
 gtgcgcgaac cgaaagcat cgggtgcgctg gtgtgcgaag taccgctgac cgatatgatc 1680
 cgttatccgc tgctgtccgc cggttcaagt tggacggacg aatacggcaa tccgcagaaa 1740
 tacgaagcct gcaaacgccg gctgggcgaa ttgtcgccgt atcacaatct ttcagacggc 1800
 atcgattatc cgcccgcaat cattaccacc agcctcagcg acgaccgcgt ccatcccgcc 1860
 cagcgcgtca aattctacgc caaactgcgc gaaacctcgc cgcaatcttg gctctactcg 1920
 cctgacggcg gcggccatac cggcaacggc acccaacgcg aatccgccga caaactcgcc 1980
 tgcgtgttgc tgtttttgaa agaatttttg ggataa 2016

<210> 160
 <211> 671
 <212> PRT
 <213> *Neisseria gonorrhoeae*

<400> 160
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 Ala Glu Thr Gln Asn Phe Ala Ala Glu Ala Asn Ala Glu Thr Arg Ala
 20 25 30

Arg Phe Leu Asn Asn Asp Lys Ala Arg Ala Leu Ser Asp Gly Ile Leu
 35 40 45
 Asn Gln Met Gln Asp Thr Arg Gln Ile Pro Phe Cys Gln Glu His Arg
 50 55 60
 Ala Arg Met Tyr His Phe His Gln Asn Ala Glu Tyr Pro Lys Gly Val
 65 70 75 80
 Tyr Arg Met Cys Thr Ala Ala Thr Tyr Arg Ser Gly Tyr Pro Glu Trp
 85 90 95
 Lys Ile Leu Phe Ser Val Ala Asp Phe Asp Glu Leu Leu Gly Asp Asp
 100 105 110
 Val Tyr Leu Gly Gly Val Ser His Leu Val Glu Gln Pro Asn Arg Ala
 115 120 125
 Leu Leu Thr Leu Asn Lys Ser Gly Gly Asp Thr Ala Tyr Thr Leu Glu
 130 135 140
 Val Asp Leu Glu Ala Gly Glu Leu Val Glu Gly Gly Phe His Phe Pro
 145 150 155 160
 Ala Gly Lys Asn His Val Ser Trp Arg Asp Glu Asn Ser Val Trp Val
 165 170 175
 Cys Pro Ala Trp Asp Glu Arg Gln Leu Thr Glu Ser Gly Tyr Pro Arg
 180 185 190
 Glu Val Trp Leu Val Glu Arg Gly Lys Ser Phe Glu Glu Ser Leu Pro
 195 200 205
 Ala Tyr Gln Ile Asp Lys Gly Ala Met Met Val Asn Ala Trp Arg Tyr
 210 215 220
 Leu Asp Pro Gln Gly Ser Pro Ile Asp Leu Ile Glu Ala Ser Asp Gly
 225 230 235 240
 Phe Tyr Thr Lys Thr Tyr Leu Gln Val Ser Ser Glu Gly Gly Ala Lys
 245 250 255
 Pro Leu Asn Leu Pro Asn Asp Cys Asp Val Val Gly Tyr Leu Ala Gly
 260 265 270
 His Leu Leu Leu Thr Leu Arg Lys Asp Trp His Arg Ala Asn Gln Ser
 275 280 285
 Tyr Pro Ser Gly Ala Leu Val Ala Val Lys Leu Asn Arg Gly Glu Leu
 290 295 300
 Gly Ala Ala Gln Leu Leu Phe Ala Pro Asp Glu Thr Gln Ala Leu Glu
 305 310 315 320
 Ser Val Glu Thr Thr Lys Arg Phe Val Val Ala Ser Leu Leu Glu Asn
 325 330 335

Val Gln Gly Arg Leu Lys Ala Trp Arg Phe Ala Asp Ser Lys Trp Gln
 340 345 350
 Glu Ala Glu Leu Pro His Leu Pro Ser Gly Ala Leu Glu Met Thr Asp
 355 360 365
 Gln Pro Trp Gly Gly Asp Val Val Tyr Leu Ala Ala Ser Asp Phe Thr
 370 375 380
 Thr Pro Leu Thr Leu Phe Ala Leu Asp Leu Asn Val Met Glu Leu Thr
 385 390 395 400
 Val Met Arg Leu Gln Pro Gln Gln Phe Val Ser Asp Gly Ile Glu Val
 405 410 415
 Arg Gln Phe Trp Ala Val Ser Ser Asp Gly Glu Arg Ile Pro Tyr Phe
 420 425 430
 His Val Gly Lys Asn Ala Ala Pro Asp Thr Pro Thr Leu Val Tyr Ala
 435 440 445
 Tyr Gly Gly Phe Gly Ile Pro Glu Leu Pro His Tyr Leu Gly Ser Val
 450 455 460
 Gly Lys Tyr Trp Leu Glu Glu Gly Asn Ala Phe Val Leu Ala Asn Ile
 465 470 475 480
 Arg Gly Gly Gly Glu Phe Gly Pro Arg Trp His Gln Ala Ala Gln Gly
 485 490 495
 Ile Ser Lys His Lys Ser Val Asp Asp Leu Leu Ala Val Val Arg Asp
 500 505 510
 Leu Ser Glu Arg Gly Met Ser Ser Pro Lys His Ile Gly Leu Gln Gly
 515 520 525
 Gly Ser Asn Gly Gly Leu Ile Thr Ala Ala Ala Phe Val Arg Glu Pro
 530 535 540
 Gln Ser Ile Gly Ala Leu Val Cys Glu Val Pro Leu Thr Asp Met Ile
 545 550 555 560
 Arg Tyr Pro Leu Leu Ser Ala Gly Ser Ser Trp Thr Asp Glu Tyr Gly
 565 570 575
 Asn Pro Gln Lys Tyr Glu Ala Cys Lys Arg Arg Leu Gly Glu Leu Ser
 580 585 590
 Pro Tyr His Asn Leu Ser Asp Gly Ile Asp Tyr Pro Pro Ala Leu Ile
 595 600 605
 Thr Thr Ser Leu Ser Asp Asp Arg Val His Pro Ala His Ala Leu Lys
 610 615 620
 Phe Tyr Ala Lys Leu Arg Glu Thr Ser Pro Gln Ser Trp Leu Tyr Ser
 625 630 635 640

Pro Asp Gly Gly Gly His Thr Gly Asn Gly Thr Gln Arg Glu Ser Ala
645 650 655

Asp Lys Leu Ala Cys Val Leu Leu Phe Leu Lys Glu Phe Leu Gly
660 665 670

<210> 161
<211> 2016
<212> DNA
<213> Neisseria meningitidis

<400> 161
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cgcgcgcgtt cagacggcat tttggcgcag ttgcaggaca cgcgcgcgat tccgttttgt 180
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tcggtggcgg atttcgacga attgcttggc gacgatgtgt atttgggcgg cgtgtcgcac 360
ttggtggaac agcccaaccg cgcgttggtt acactgagca aattgggcag cgatacggcg 420
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aagagtttcg aggaaagcct gcctgtgtat caaatcgcgc aagacggcat gatggtgaac 660
gcgtggcggt atctcgatcc gcagggttcg ccgattgatt tgattgaagc gtcggacggt 720
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cacgcgtca agttctacgc caaactgcgc gaaacctccg cgcaatcttg gctctactcg 1920
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tgcgctcttg tgtttttgaa agagtttttg ggctaa 2016

<210> 162
<211> 671
<212> PRT
<213> Neisseria meningitidis

<400> 162
Met Lys Ser Tyr Pro Asp Pro Tyr Arg His Phe Glu Asn Leu Asp Ser

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Arg Phe Leu Glu Asn Asp Lys Ala Arg Ala Leu Ser Asp Gly Ile Leu	35	40	45
Ala Gln Leu Gln Asp Thr Arg Gln Ile Pro Phe Cys Gln Glu His Arg	50	55	60
Ala Arg Met Tyr His Phe His Gln Asp Ala Glu Tyr Pro Lys Gly Val	65	70	75
Tyr Arg Val Cys Thr Ala Ala Thr Tyr Arg Ser Gly Tyr Pro Glu Trp	85	90	95
Lys Ile Leu Phe Ser Val Ala Asp Phe Asp Glu Leu Leu Gly Asp Asp	100	105	110
Val Tyr Leu Gly Gly Val Ser His Leu Val Glu Gln Pro Asn Arg Ala	115	120	125
Leu Leu Thr Leu Ser Lys Leu Gly Ser Asp Thr Ala Tyr Thr Leu Glu	130	135	140
Val Asp Leu Glu Ala Gly Glu Leu Val Glu Gly Gly Phe His Phe Pro	145	150	155
Ala Gly Lys Asn His Val Ser Trp Arg Asp Glu Asn Ser Val Trp Val	165	170	175
Cys Pro Ala Trp Asn Glu Arg Gln Leu Thr Gln Ser Gly Tyr Pro Arg	180	185	190
Glu Val Trp Leu Val Glu Arg Gly Lys Ser Phe Glu Glu Ser Leu Pro	195	200	205
Val Tyr Gln Ile Gly Glu Asp Gly Met Met Val Asn Ala Trp Arg Tyr	210	215	220
Leu Asp Pro Gln Gly Ser Pro Ile Asp Leu Ile Glu Ala Ser Asp Gly	225	230	235
Phe Tyr Thr Lys Thr Tyr Leu Arg Val Ser Ala Glu Gly Glu Ala Lys	245	250	255
Pro Leu Asn Leu Pro Asn Asp Cys Asp Val Val Gly Tyr Leu Ala Gly	260	265	270
His Leu Leu Leu Thr Leu Arg Lys Asp Trp Asn Arg Ala Asn Gln Ser	275	280	285
Tyr Pro Ser Gly Ala Leu Val Ala Val Lys Leu Asn Arg Gly Glu Leu	290	295	300
Gly Ala Ala Gln Leu Leu Phe Ala Pro Asp Glu Thr Gln Ala Leu Glu			

305		310		315		320
Ser Val Glu Thr Thr Lys Arg Phe Val Val Ala Ser Leu Leu Glu Asn						
		325		330		335
Val Gln Gly Arg Leu Lys Ala Trp Arg Phe Ala Asp Gly Lys Trp Gln						
		340		345		350
Glu Val Glu Leu Pro Arg Leu Pro Ser Gly Ala Leu Glu Met Thr Asp						
		355		360		365
Gln Pro Trp Gly Gly Asp Val Val Tyr Leu Ala Ala Ser Asp Phe Thr						
		370		375		380
Thr Pro Leu Thr Leu Phe Ala Leu Asp Leu Asn Val Met Glu Leu Thr						
		385		390		400
Val Met Arg Arg Gln Pro Gln Gln Phe Asp Ser Asp Gly Ile Asn Val						
		405		410		415
Gln Gln Phe Trp Thr Thr Ser Ala Asp Gly Glu Arg Ile Pro Tyr Phe						
		420		425		430
His Val Gly Lys Asn Ala Ala Pro Asp Met Pro Thr Leu Val Tyr Ala						
		435		440		445
Tyr Gly Gly Phe Gly Ile Pro Glu Leu Pro His Tyr Leu Gly Ser Ile						
		450		455		460
Gly Lys Tyr Trp Leu Glu Glu Gly Asn Ala Phe Val Leu Ala Asn Ile						
		465		470		480
Arg Gly Gly Gly Glu Phe Gly Pro Arg Trp His Gln Ala Ala Gln Gly						
		485		490		495
Ile Ser Lys His Lys Ser Val Asp Asp Leu Leu Ala Val Val Arg Asp						
		500		505		510
Leu Ser Glu Arg Gly Ile Ser Ser Pro Glu His Ile Gly Leu Gln Gly						
		515		520		525
Gly Ser Asn Gly Gly Leu Ile Thr Ala Ala Ala Phe Val Arg Glu Pro						
		530		535		540
Gln Ser Ile Gly Ala Leu Val Cys Glu Val Pro Leu Thr Asp Met Ile						
		545		550		560
Arg Tyr Pro Leu Leu Ser Ala Gly Ser Ser Trp Thr Asp Glu Tyr Gly						
		565		570		575
Asn Pro Gln Lys Tyr Glu Val Cys Lys Arg Arg Leu Gly Glu Leu Ser						
		580		585		590
Pro Tyr His Asn Leu Ser Asp Gly Ile Asp Tyr Pro Pro Ala Leu Ile						
		595		600		605
Thr Thr Ser Leu Ser Asp Asp Arg Val His Pro Ala His Ala Leu Lys						

610	615	620
Phe Tyr Ala Lys Leu Arg Glu Thr Ser Ala Gln Ser Trp Leu Tyr Ser		
625	630	635 640
Pro Asp Gly Gly Gly His Thr Gly Asn Gly Thr Gln Arg Glu Ser Ala		
	645	650 655
Asp Glu Leu Ala Cys Val Leu Leu Phe Leu Lys Glu Phe Leu Gly		
	660	665 670

<210> 163
 <211> 2016
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 163

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cgcgcatgtg	ctgacggcat	tttggcgcag	ttgcaggaca	cgcggcacaa	tccgttttgt	180
caggaacacc	gcgcgcggat	gtaccatttc	catcaagatg	cggaatatcc	gaaaggcgtg	240
taccgcgtgt	gtaccgcggc	gaattaccgt	tcgggctatc	ctgagtggaa	aatcctgttt	300
tcggtggcgg	atttcgacga	attgctcggg	gacgatgtat	atctaggcgg	cgtgtcgcac	360
ctggtggaac	agcccaaccg	cgcgttggtt	acactgagca	aatcgggcgg	cgataccgcg	420
tacacgctgg	aagtggattt	ggaagcaggg	gagttggtag	aaggcgggtt	tcactttccg	480
gcaggcaaaa	accatgtgtc	gtggcgcgat	gaaaacagcg	tgtgggtgtg	tccggcttgg	540
gacgaacgcc	agttgaccga	atcgggctat	ccgcgcgagg	tgtggctggt	ggaacgcggc	600
aagagtttcg	aggaaagcct	gccgggtgtac	caaattgctg	aagacggcat	gatggtgaac	660
gcgtggcggt	acctcgatcc	gcagggttcg	ccgattgatt	tgattgaagc	gtctgacggg	720
ttttacacca	aaacctattt	gcagggtctc	gccgaaggcg	aagcgaaacc	gttaaaccctg	780
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gactggcacc	gcgcgaacca	aagctatccg	agtggcgcat	tggtagcagt	aaaattaaac	900
cgcggcgaat	tgggcgcggc	gcagcttttg	tttgcgcca	atgaaacgca	ggcattggaa	960
agcgtggaaa	cgaccaagcg	ttttgtcgtg	gcgagcctgc	tggaacacgt	acagggtcgt	1020
ctgaaagcgt	ggcgttttac	tgatggcaaa	tggcaggaaa	ccgagttgcc	gcgcctgcct	1080
tcggggcgcg	tggaatgac	cgaccaaccg	tggggggcgg	acgtagttta	ccttgccgcc	1140
agcgatttca	ccacgccgct	gacgctgttt	gcattggatt	tgaacgtgat	ggaactgacc	1200
gtcatgcgcc	gccagccgca	gcagtttgat	tcagacggca	ttaacgtgca	gcagttttgg	1260
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gacatgccga	cgctgggtct	tgcttacggc	ggtttcgcca	ttcccgaatt	gccgcattat	1380
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cgcggcggcg	gcgagttcgg	cccgcgctgg	catcaggcgg	cgcagggaat	cagcaaacat	1500
aaaagcgttg	atgattttat	ggcagtcgtg	agcgatttgt	ccgaacgcgg	tatcagttcg	1560
cccgaacaca	tcggcttgca	gggcggcagc	aacggcggac	tgattactgc	cgccgccttc	1620
gtgcgcgaac	cgcaaagcat	aggcgcgctg	gtgtgcgaag	tgccgctgac	cgacatgac	1680
cgttatccgc	tgctctccgc	cggttcaagc	tggacagacg	aatacggcaa	tccgcaaaaa	1740
tacgaagtct	gcaaacgcgc	gttgggcgaa	ttgtcgccgt	atcacaatct	ttcagacggc	1800
atcgattatc	cgcccgcgct	cattaccacc	agcctgtccg	acgatcgcgt	ccatcccgcc	1860
cacgcgctca	agttctacgc	caaactgcgc	gaaacctcgc	cgcaatcttg	gctctactcg	1920
cctgacggcg	gcggccatac	cggcaacggc	acgcagcgcg	aagccgccga	cgaactcgcc	1980
tgcggtgttc	tgtttttgaa	agagtttttg	ggctaa			2016

<210> 164
 <211> 671
 <212> PRT

<213> Neisseria meningitidis

<400> 164

Met	Lys	Ser	Tyr	Pro	Asp	Pro	Tyr	Arg	His	Phe	Glu	Asn	Leu	Asp	Ser
1				5					10					15	
Ala	Glu	Thr	Gln	Asn	Phe	Ala	Ala	Glu	Ala	Asn	Ala	Glu	Thr	Arg	Ala
			20					25					30		
Arg	Phe	Leu	Asn	Asn	Asp	Lys	Ala	Arg	Ala	Leu	Ser	Asp	Gly	Ile	Leu
		35					40					45			
Ala	Gln	Leu	Gln	Asp	Thr	Arg	Gln	Ile	Pro	Phe	Cys	Gln	Glu	His	Arg
	50					55					60				
Ala	Arg	Met	Tyr	His	Phe	His	Gln	Asp	Ala	Glu	Tyr	Pro	Lys	Gly	Val
	65				70					75					80
Tyr	Arg	Val	Cys	Thr	Ala	Ala	Thr	Tyr	Arg	Ser	Gly	Tyr	Pro	Glu	Trp
				85					90					95	
Lys	Ile	Leu	Phe	Ser	Val	Ala	Asp	Phe	Asp	Glu	Leu	Leu	Gly	Asp	Asp
		100						105					110		
Val	Tyr	Leu	Gly	Gly	Val	Ser	His	Leu	Val	Glu	Gln	Pro	Asn	Arg	Ala
	115						120					125			
Leu	Leu	Thr	Leu	Ser	Lys	Ser	Gly	Gly	Asp	Thr	Ala	Tyr	Thr	Leu	Glu
	130					135					140				
Val	Asp	Leu	Glu	Ala	Gly	Glu	Leu	Val	Glu	Gly	Gly	Phe	His	Phe	Pro
145					150					155					160
Ala	Gly	Lys	Asn	His	Val	Ser	Trp	Arg	Asp	Glu	Asn	Ser	Val	Trp	Val
			165						170					175	
Cys	Pro	Ala	Trp	Asp	Glu	Arg	Gln	Leu	Thr	Glu	Ser	Gly	Tyr	Pro	Arg
		180						185					190		
Glu	Val	Trp	Leu	Val	Glu	Arg	Gly	Lys	Ser	Phe	Glu	Glu	Ser	Leu	Pro
	195						200					205			
Val	Tyr	Gln	Ile	Ala	Glu	Asp	Gly	Met	Met	Val	Asn	Ala	Trp	Arg	Tyr
	210					215					220				
Leu	Asp	Pro	Gln	Gly	Ser	Pro	Ile	Asp	Leu	Ile	Glu	Ala	Ser	Asp	Gly
225					230					235					240
Phe	Tyr	Thr	Lys	Thr	Tyr	Leu	Gln	Val	Ser	Ala	Glu	Gly	Glu	Ala	Lys
				245					250					255	
Pro	Leu	Asn	Leu	Pro	Asn	Asp	Cys	Asp	Val	Val	Gly	Tyr	Leu	Ala	Gly
		260						265					270		
His	Leu	Leu	Leu	Thr	Leu	Arg	Lys	Asp	Trp	His	Arg	Ala	Asn	Gln	Ser
	275						280					285			

Tyr	Pro	Ser	Gly	Ala	Leu	Val	Ala	Val	Lys	Leu	Asn	Arg	Gly	Glu	Leu	290	295	300	
Gly	Ala	Ala	Gln	Leu	Leu	Phe	Ala	Pro	Asn	Glu	Thr	Gln	Ala	Leu	Glu	305	310	315	320
Ser	Val	Glu	Thr	Thr	Lys	Arg	Phe	Val	Val	Ala	Ser	Leu	Leu	Glu	Asn	325	330	335	
Val	Gln	Gly	Arg	Leu	Lys	Ala	Trp	Arg	Phe	Thr	Asp	Gly	Lys	Trp	Gln	340	345	350	
Glu	Thr	Glu	Leu	Pro	Arg	Leu	Pro	Ser	Gly	Ala	Leu	Glu	Met	Thr	Asp	355	360	365	
Gln	Pro	Trp	Gly	Gly	Asp	Val	Val	Tyr	Leu	Ala	Ala	Ser	Asp	Phe	Thr	370	375	380	
Thr	Pro	Leu	Thr	Leu	Phe	Ala	Leu	Asp	Leu	Asn	Val	Met	Glu	Leu	Thr	385	390	395	400
Val	Met	Arg	Arg	Gln	Pro	Gln	Gln	Phe	Asp	Ser	Asp	Gly	Ile	Asn	Val	405	410	415	
Gln	Gln	Phe	Trp	Thr	Thr	Ser	Ala	Asp	Gly	Glu	Arg	Ile	Pro	Tyr	Phe	420	425	430	
His	Val	Gly	Lys	Asn	Ala	Ala	Pro	Asp	Met	Pro	Thr	Leu	Val	Tyr	Ala	435	440	445	
Tyr	Gly	Gly	Phe	Gly	Ile	Pro	Glu	Leu	Pro	His	Tyr	Leu	Gly	Ser	Ile	450	455	460	
Gly	Lys	Tyr	Trp	Leu	Glu	Glu	Gly	Asn	Ala	Phe	Val	Leu	Ala	Asn	Ile	465	470	475	480
Arg	Gly	Gly	Gly	Glu	Phe	Gly	Pro	Arg	Trp	His	Gln	Ala	Ala	Gln	Gly	485	490	495	
Ile	Ser	Lys	His	Lys	Ser	Val	Asp	Asp	Leu	Leu	Ala	Val	Val	Ser	Asp	500	505	510	
Leu	Ser	Glu	Arg	Gly	Ile	Ser	Ser	Pro	Glu	His	Ile	Gly	Leu	Gln	Gly	515	520	525	
Gly	Ser	Asn	Gly	Gly	Leu	Ile	Thr	Ala	Ala	Ala	Phe	Val	Arg	Glu	Pro	530	535	540	
Gln	Ser	Ile	Gly	Ala	Leu	Val	Cys	Glu	Val	Pro	Leu	Thr	Asp	Met	Ile	545	550	555	560
Arg	Tyr	Pro	Leu	Leu	Ser	Ala	Gly	Ser	Ser	Trp	Thr	Asp	Glu	Tyr	Gly	565	570	575	
Asn	Pro	Gln	Lys	Tyr	Glu	Val	Cys	Lys	Arg	Arg	Leu	Gly	Glu	Leu	Ser	580	585	590	

Pro Tyr His Asn Leu Ser Asp Gly Ile Asp Tyr Pro Pro Ala Leu Ile
595 600 605

Thr Thr Ser Leu Ser Asp Asp Arg Val His Pro Ala His Ala Leu Lys
610 615 620

Phe Tyr Ala Lys Leu Arg Glu Thr Ser Pro Gln Ser Trp Leu Tyr Ser
625 630 635 640

Pro Asp Gly Gly Gly His Thr Gly Asn Gly Thr Gln Arg Glu Ala Ala
645 650 655

Asp Glu Leu Ala Cys Val Leu Leu Phe Leu Lys Glu Phe Leu Gly
660 665 670

<210> 165

<211> 606

<212> DNA

<213> Neisseria gonorrhoeae

<400> 165

atgacgatga tttgcttgcg cttccaagcg ttcgtgccgc ataccagcgc gttatccaac 60

acttccacgg cagccggccc ttcctgcccc atggcgggcg tgcggtcgat gatgaaaatc 120
cagccgggggt ttttctcttt gatgtattcg aaggaaacgg gctgcccgtg cccttcgttg 180
cgtaaagatt cgtccacggg cggcaggccg atgtcgccgt gtatccaact tgccaaccgc 240
gattgcgtgc cgaaggcgga caccttggtg cctgtaaccg acagcaccag cccgcgtcct 300
ttgccttttg cggcttcgcg cttttgggcg aacagcgcggt caatctgcg attcaattcc 360
gccacgcgcg cttccttacc gaaaatccgc gacagggtct ccattctgctt ctgcgccgtg 420
gtgcggatat tgccgttgtc caccgtcaaa tctatggtgg tcgcgttttt cgccaactgt 480
tcatacgctt ccgcacccgg cccgcgggta atgacaaact gcggattgtg gcggtgcagg 540
gattcgcaat cgggctcaaa cagcgtcccc accgttgccg ccttgtcaaa tgcaggctgc 600
aaatag 606

<210> 166

<211> 201

<212> PRT

<213> Neisseria gonorrhoeae

<400> 166

Met Thr Met Ile Cys Leu Arg Phe Gln Ala Phe Val Pro His Thr Ser
1 5 10 15

Ala Leu Ser Asn Thr Ser Thr Ala Ala Gly Pro Ser Cys Pro Met Ala
20 25 30

Ala Val Arg Ser Met Met Lys Ile Gln Pro Gly Phe Phe Ser Leu Met
35 40 45

Tyr Ser Lys Glu Thr Gly Cys Pro Cys Pro Ser Leu Arg Lys Asp Ser
50 55 60

Ser Thr Gly Gly Arg Pro Met Ser Pro Cys Ile Gln Leu Ala Asn Arg
65 70 75 80

Asp Cys Val Pro Lys Ala Asp Thr Leu Leu Pro Val Thr Asp Ser Thr
 85 90 95
 Ser Pro Arg Pro Leu Pro Leu Ala Ala Ser Arg Phe Trp Ala Asn Ser
 100 105 110
 Ala Ser Ile Cys Ala Phe Asn Ser Ala Thr Arg Ala Ser Leu Pro Lys
 115 120 125
 Ile Arg Asp Arg Val Ser Ile Cys Phe Ser Pro Leu Val Arg Ile Leu
 130 135 140
 Pro Leu Ser Thr Val Lys Ser Met Val Val Ala Phe Phe Ala Asn Cys
 145 150 155 160
 Ser Tyr Ala Ser Ala Pro Gly Pro Pro Val Met Thr Asn Cys Gly Leu
 165 170 175
 Trp Arg Cys Arg Asp Ser Gln Ser Gly Ser Asn Ser Val Pro Thr Val
 180 185 190
 Ala Ala Leu Ser Asn Ala Gly Cys Lys
 195 200

<210> 167
 <211> 606
 <212> DNA
 <213> Neisseria meningitidis

<400> 167
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 acttcgacag ccgcgggccc ttctgtcccg atggcggcgg tacggtcgat gatgaaaatc 120
 caatcgggggt ttttctcttt gatgtattcg aaggaaacag gctgcccgtg cccctcgttg 180
 cgtaaagatt cgtctacagg cggtaggcgg atgtcgccgt gtatccaact tgccaaccgc 240
 gactgcgtgc cgaaggcgga caccttggtg cccgtaaccg acagcaccag cccgcgtcct 300
 ttgcctttgg cggttcgcg cgtttgggcg aacagcgcgt caatctgcgc cttcaattcc 360
 gccgcgcgcg ctcccttgcc gaaaatccgc gccaaaggtct ccatctgctt ttcgccgctg 420
 gtgcggatat tgccgttgte caccgtcaga tctatgggtg tcgcgttttt cgctaactgt 480
 tcatacgctt ccgcgcccgg cccgcgggta atgacaagct gaggattgta gcggtgcagg 540
 gcttcgtaat cgggctcgaa cagcgtcccc accgttgccg ccttgtcaaa tgcaggctgc 600
 aaataa 606

<210> 168
 <211> 201
 <212> PRT
 <213> Neisseria meningitides

<220>
 <221> UNSURE
 <222> (20)
 <223> Xaa is any amino acid

<220>
 <221> UNSURE
 <222> (27)

<223> Xaa is any amino acid

<220>

<221> UNSURE

<222> (174)

<223> Xaa is any amino acid

<220>

<221> UNSURE

<222> (177)

<223> Xaa is any amino acid

<220>

<221> UNSURE

<222> (183)

<223> Xaa is any amino acid

<400> 168

Met	Thr	Met	Ile	Cys	Leu	Arg	Phe	Gln	Ala	Phe	Val	Pro	Arg	Thr	Ser
1				5					10					15	

Ala	Leu	Ser	Xaa	Thr	Ser	Thr	Ala	Ala	Gly	Xaa	Ser	Cys	Pro	Met	Ala
			20					25					30		

Ala	Val	Arg	Ser	Met	Met	Lys	Ile	Gln	Ser	Gly	Phe	Phe	Ser	Leu	Met
		35					40					45			

Tyr	Ser	Lys	Glu	Thr	Gly	Cys	Pro	Cys	Pro	Ser	Leu	Arg	Lys	Asp	Ser
	50					55					60				

Ser	Thr	Gly	Gly	Arg	Pro	Met	Ser	Pro	Cys	Ile	Gln	Leu	Ala	Asn	Arg
	65				70					75					80

Asp	Cys	Val	Pro	Lys	Ala	Asp	Thr	Leu	Leu	Pro	Val	Thr	Asp	Ser	Thr
				85					90					95	

Ser	Pro	Arg	Pro	Leu	Pro	Leu	Ala	Ala	Ser	Arg	Val	Trp	Ala	Asn	Ser
			100					105						110	

Ala	Ser	Ile	Cys	Ala	Phe	Asn	Ser	Ala	Ala	Arg	Ala	Ser	Leu	Pro	Lys
		115						120					125		

Ile	Arg	Ala	Lys	Val	Ser	Ile	Cys	Phe	Ser	Pro	Leu	Val	Arg	Ile	Leu
	130						135					140			

Pro	Leu	Ser	Thr	Val	Arg	Ser	Met	Val	Val	Ala	Phe	Phe	Ala	Asn	Cys
145					150					155					160

Ser	Tyr	Ala	Ser	Ala	Pro	Gly	Pro	Pro	Val	Met	Thr	Ser	Xaa	Gly	Leu
				165					170					175	

Xaa	Arg	Cys	Arg	Ala	Ser	Xaa	Ser	Gly	Ser	Asn	Ser	Val	Pro	Thr	Val
			180					185					190		

Ala	Ala	Leu	Ser	Asn	Ala	Gly	Cys	Lys
		195					200	

<210> 169
 <211> 606
 <212> DNA
 <213> Neisseria meningitidis

<400> 169
 atgacgatga tttgcttgcg cttccaagcg ttcgtgccgc gtaccagcgc gttatccaat 60
 acttcgacag cgcgcggccc ttcctgcccg atggcggcgg tacggtcgat gatgaaaatc 120
 caatcggggg ttttctcttt gatgtattcg aaggaaacag gctgcccggtg cccctcgttg 180
 cgtaaagatt cgtctacagg cggtaggcgc atgtcgccgt gtatccaact tgccaaccgc 240
 gactgcgtgc cgaaggcgga caccttggtg cccgtaaccg acagcaccag cccgcgtcct 300
 ttgccttttg cggcttcgcg cgtttgggcg aacagcgcgt caatctgcgc cttcaattcc 360
 gccgcgcgcg cttccttgcc gaaaatccgc gccaaaggctt ccatctgctt ttcgccgctg 420
 gtgcggatat tgccgttgtc caccgtcaga tctatgggtg tcgcgttttt cgccaactgt 480
 tcatacgctt ccgcgcgcgg cccgcgggta atgacaagct gaggattgta gcggtgcagg 540
 gcttcgtaat cgggctcgaa cagcgtcccc accgttgccg ccttggtcaa tgcaggctgc 600
 aaataa 606

<210> 170
 <211> 198
 <212> PRT
 <213> Neisseria meningitidis

<400> 170
 Met Thr Met Ile Cys Leu Arg Phe Gln Ala Phe Val Pro Arg Thr Ser
 1 5 10 15
 Ala Leu Ser Asn Thr Ser Thr Ala Ala Gly Pro Ser Cys Pro Met Ala
 20 25 30
 Ala Val Arg Ser Met Met Lys Ile Gln Ser Gly Phe Phe Ser Leu Met
 35 40 45
 Tyr Ser Lys Glu Thr Gly Cys Pro Cys Pro Ser Leu Arg Lys Asp Ser
 50 55 60
 Ser Thr Gly Gly Arg Pro Met Ser Pro Cys Ile Gln Leu Ala Asn Arg
 65 70 75 80
 Asp Cys Val Pro Lys Ala Asp Thr Leu Leu Pro Val Thr Asp Ser Thr
 85 90 95
 Ser Pro Arg Pro Leu Pro Leu Ala Ala Ser Arg Val Trp Ala Asn Ser
 100 105 110
 Ala Ser Ile Cys Ala Phe Asn Ser Ala Ala Arg Ala Ser Leu Pro Lys
 115 120 125
 Ile Arg Ala Lys Val Ser Ile Cys Phe Ser Pro Leu Val Arg Ile Leu
 130 135 140
 Pro Leu Ser Thr Val Arg Ser Met Val Val Ala Phe Phe Ala Asn Cys
 145 150 155 160
 Ser Tyr Ala Ser Ala Pro Gly Pro Pro Val Met Thr Ser Gly Leu Arg

165 170 175
 Cys Arg Ala Ser Ser Gly Ser Asn Ser Val Pro Thr Val Ala Ala Leu
 180 185 190

Ser Asn Ala Gly Cys Lys
 195

<210> 171
 <211> 511
 <212> DNA
 <213> Neisseria meningitidis

<400> 171
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 acttcgacag ccgcgcggccc ttcttgccc atggcggcgg tacggtcgat gatgaaaatc 120
 caatcggggt ttttctcttt gatgtattcg aaggaaacag gctgcccgtg cccctcgttg 180
 cgtaaagatt cgtctacagg cggtaggcgg atgtcgccgt gtatccaact tgccaaccgc 240
 gactgcgtgc cgaaggcgga caccttggtt cccgtaaccg acagcaccag cccgcgtcct 300
 ttgccttttg cggtcttcgc cgtttgggcg aacagcgcgt caatctgcgc cttcaattcc 360
 gccgcgcgcg cttccttgcc gaaaatccgc gccaaagtct ccatctgctt ttgcgcgctg 420
 gtgcggatat tgccgttgtc caccgtcaga tctatggtgg tcgcgttttt cgctaactgt 480
 tcatacgctt ccgcgcgcgg cccgcgcgta a 511

<210> 172
 <211> 173
 <212> PRT
 <213> Neisseria meningitidis

<400> 172
 Met Thr Met Ile Cys Leu Arg Phe Gln Ala Phe Val Pro Arg Thr Ser
 1 5 10 15
 Ala Leu Ser Asn Thr Ser Thr Ala Ala Gly Pro Ser Cys Pro Met Ala
 20 25 30
 Ala Val Arg Ser Met Met Lys Ile Gln Ser Gly Phe Phe Ser Leu Met
 35 40 45
 Tyr Ser Lys Glu Thr Gly Cys Pro Cys Pro Ser Leu Arg Lys Asp Ser
 50 55 60
 Ser Thr Gly Gly Arg Pro Met Ser Pro Cys Ile Gln Leu Ala Asn Arg
 65 70 75 80
 Asp Cys Val Pro Lys Ala Asp Thr Leu Leu Pro Val Thr Asp Ser Thr
 85 90 95
 Ser Pro Arg Pro Leu Pro Leu Ala Ala Ser Arg Val Trp Ala Asn Ser
 100 105 110
 Ala Ser Ile Cys Ala Phe Asn Ser Ala Ala Arg Ala Ser Leu Pro Lys
 115 120 125
 Ile Arg Ala Lys Val Ser Ile Cys Phe Ser Pro Leu Val Arg Ile Leu

130

135

140

Pro Leu Ser Thr Val Arg Ser Met Val Val Ala Phe Phe Ala Asn Cys
 145 150 155 160

Ser Tyr Ala Ser Ala Pro Gly Pro Pro Val Met Thr Ser
 165 170

<210> 173

<211> 511

<212> DNA

<213> Neisseria meningitidis

<400> 173

atgacgatga tttgcttgcg cttccaagcg ttcgtgccgc gtaccagcgc gttatccaat 60
 acttcgacag ccgccggccc ttcctgcccc atggcggcgg tacggtcgat gatgaaaatc 120
 caatcggggg ttttctcttt gatgtattcg aaggaaacag gctgcccggtg cccctcgttg 180
 cgtaaagatt cgtctacagg cggtaggccg atgtcgccgt gtatccaact tgccaaccgc 240
 gactgcgtgc cgaaggcgga caccctgttg cccgtaaccg acagcaccag cccgcgtcct 300
 ttgcctttgg cggttcgcgc cgtttgggcg aacagcgcgt caatctgcgc cttcaattcc 360
 gccgcgcgcg cttccttgcc gaaaatccgc gccaaaggtc ccatctgctt ttcgccgctg 420
 gtgcggatat tgccgttgtc caccgtcaga tctatggtgg tcgcgttttt cgccaactgt 480
 tcatacgctt ccgcgcccg cccgcgcgta a 511

<210> 174

<211> 173

<212> PRT

<213> Neisseria meningitidis

<400> 174

Met Thr Met Ile Cys Leu Arg Phe Gln Ala Phe Val Pro Arg Thr Ser
 1 5 10 15

Ala Leu Ser Asn Thr Ser Thr Ala Ala Gly Pro Ser Cys Pro Met Ala
 20 25 30

Ala Val Arg Ser Met Met Lys Ile Gln Ser Gly Phe Phe Ser Leu Met
 35 40 45

Tyr Ser Lys Glu Thr Gly Cys Pro Cys Pro Ser Leu Arg Lys Asp Ser
 50 55 60

Ser Thr Gly Gly Arg Pro Met Ser Pro Cys Ile Gln Leu Ala Asn Arg
 65 70 75 80

Asp Cys Val Pro Lys Ala Asp Thr Leu Leu Pro Val Thr Asp Ser Thr
 85 90 95

Ser Pro Arg Pro Leu Pro Leu Ala Ala Ser Arg Val Trp Ala Asn Ser
 100 105 110

Ala Ser Ile Cys Ala Phe Asn Ser Ala Ala Arg Ala Ser Leu Pro Lys
 115 120 125

Ile Arg Ala Lys Val Ser Ile Cys Phe Ser Pro Leu Val Arg Ile Leu

130	135	140
Pro Leu Ser Thr Val Arg Ser Met Val Val Ala Phe Phe Ala Asn Cys		
145	150	155 160
Ser Tyr Ala Ser Ala Pro Gly Pro Pro Val Met Thr Ser		
165	170	

<210> 175
 <211> 387
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 175
 atggttggtt caaatcaaaa tatctatgcc gtcggcccat cagcactttt tcacatccga 60
 aggcaaaaat ccgtaatgcc gcctgaacgc ttcgttgaac cgtcccgcgt ggcggtagcc 120
 gcaaaagtgc atcgcggtt ggatggtgct gcccgattcg atgagggcga gcgcgtgttc 180
 cagccgcagg cggcgagggc gtcggcgac ggtttcgccg gtttgcgtt tgaaatagcg 240
 tttcaggtag cattcggttca gcccgcgcg gcgggcgatt tcggcgatgg tcagcgggcg 300
 ggccaattcg ctgttcaaaa tatcggcggc ttcgtctatg cgccggcggc ggtagccgtt 360
 gtcgtggcgg cggaaggtga agcgtaa 387

<210> 176
 <211> 128
 <212> PRT
 <213> Neisseria gonorrhoeae

<400> 176
 Met Val Val Ser Asn Gln Asn Ile Tyr Ala Val Gly Pro Ser Ala Leu
 1 5 10 15
 Phe His Ile Arg Arg Gln Lys Ser Val Met Pro Pro Glu Arg Phe Val
 20 25 30
 Glu Pro Ser Arg Val Ala Val Ala Ala Lys Val His Arg Gly Leu Asp
 35 40 45
 Gly Ala Ala Arg Phe Asp Glu Gly Glu Arg Val Phe Gln Pro Gln Ala
 50 55 60
 Ala Gln Ala Ser Gly Asp Gly Phe Ala Gly Leu Arg Phe Glu Ile Ala
 65 70 75 80
 Phe Gln Val Ala Phe Val Gln Pro Asp Ala Ala Gly Asp Phe Gly Asp
 85 90 95
 Gly Gln Arg Ala Gly Glu Phe Ala Val Gln Asn Ile Gly Gly Phe Val
 100 105 110
 Tyr Ala Pro Ala Ala Val Ala Val Val Val Ala Ala Glu Gly Glu Ala
 115 120 125

<210> 177
<211> 390
<212> DNA
<213> *Neisseria meningitidis*

<400> 177
atggttggtt caaatcaaaa tatctatgcc gccggcccct cagcacttct tcacatccga 60
aggcaaaaat ccgtaatgcc gtctgaacgc ttcgttgaac cgtcccgcgt ggcggtagcc 120
gcaaaagtgc atggcggcgt ggacggtgct gccggattcg atgagggcga gcgcgtgttc 180
cagccgcagg cggcgcaggc atccggcgac ggtttcgccg gtttgcgctt tgaaatagcg 240
tttcaggtag cattcgttca gtccgacgcg gcgggcgatt tcggcgatgg tcagcggacg 300
ggcgaattcg tgttgcagga tgtcggcggc ttcgtctatg cgccgacggc ggtaaccgtt 360
gtcgtggcgg cggaaggtga agcgcaataa 390

<210> 178
<211> 129
<212> PRT
<213> *Neisseria meningitidis*

<400> 178
Met Val Val Ser Asn Gln Asn Ile Tyr Ala Ala Gly Pro Ser Ala Leu
1 5 10 15
Leu His Ile Arg Arg Gln Lys Ser Val Met Pro Ser Glu Arg Phe Val
20 25 30
Glu Pro Ser Arg Val Ala Val Ala Lys Val His Gly Gly Leu Asp
35 40 45
Gly Ala Ala Gly Phe Asp Glu Gly Glu Arg Val Phe Gln Pro Gln Ala
50 55 60
Ala Gln Ala Ser Gly Asp Gly Phe Ala Gly Leu Arg Phe Glu Ile Ala
65 70 75 80
Phe Gln Val Ala Phe Val Gln Ser Asp Ala Ala Gly Asp Phe Gly Asp
85 90 95
Gly Gln Arg Thr Gly Glu Phe Val Leu Gln Asp Val Gly Gly Phe Val
100 105 110
Tyr Ala Pro Thr Ala Val Thr Val Val Val Ala Ala Glu Gly Glu Ala
115 120 125
Gln

<210> 179
<211> 390
<212> DNA
<213> *Neisseria meningitidis*

<400> 179
atggttggtt caaatcaaaa tatctatgcc gccggcccct cagcacttct tcacatccga 60

```

aggcaaaaat ccgtaatgcc gtctgaacgc ttcgttgaac cgtcccgcgt ggcggtagcc 120
gcaaaagtgc atggcggtt ggacggtgct gccggttcg atgagggcga gcgcgtgttc 180
cagccgcagg cggcgcaggc atccggcgac ggtttcgccg gtttgcgctt tgaaatagcg 240
tttcaggtag cattcgttca gtccgacgcg gcgggcgatt tcggcgatgg tcagcggacg 300
ggcgaattcg tgttgcagga tgtcggcggc ttcgtctatg cgccgacggc ggtaaccgtt 360
gtcgtggcgg cggaaggtga agcgcaataa 390

```

<210> 180
 <211> 129
 <212> PRT
 <213> *Neisseria meningitidis*

```

<400> 180
Met Val Val Ser Asn Gln Asn Ile Tyr Ala Ala Gly Pro Ser Ala Leu
  1             5             10             15

Leu His Ile Arg Arg Gln Lys Ser Val Met Pro Ser Glu Arg Phe Val
      20             25             30

Glu Pro Ser Arg Val Ala Val Ala Ala Lys Val His Gly Gly Leu Asp
      35             40             45

Gly Ala Ala Gly Phe Asp Glu Gly Glu Arg Val Phe Gln Pro Gln Ala
      50             55             60

Ala Gln Ala Ser Gly Asp Gly Phe Ala Gly Leu Arg Phe Glu Ile Ala
      65             70             75             80

Phe Gln Val Ala Phe Val Gln Ser Asp Ala Ala Gly Asp Phe Gly Asp
      85             90             95

Gly Gln Arg Thr Gly Glu Phe Val Leu Gln Asp Val Gly Gly Phe Val
      100            105            110

Tyr Ala Pro Thr Ala Val Thr Val Val Val Ala Ala Glu Gly Glu Ala
      115            120            125

Gln

```

<210> 181
 <211> 270
 <212> DNA
 <213> *Neisseria gonorrhoeae*

```

<400> 181
atgctgcccc accagagcgt cgagttcttg ccacaagtcg tcgtttttga cgggctgttt 60
ggcggcggtt ttccagccgt tgcgcttcca accgtgtatc cagttttcca tgccgttttt 120
gacgtattgc gagtcggtgc agatgatgac ggtgcagcgg cgtttgagcg atttcagccc 180
ttcgataacg gcggtcagct ccatgcggtt gttggtggtt tgcgcttcgc cgccgaaaag 240
ttctttttcg cggctgccgt agcgcatata 270

```

<210> 182
 <211> 89

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 182

Met Leu Pro Asp Gln Ser Val Glu Phe Leu Pro Gln Val Val Val Phe
1 5 10 15

Asp Gly Leu Phe Gly Gly Gly Phe Pro Ala Val Ala Leu Pro Thr Val
20 25 30

Tyr Pro Val Phe His Ala Val Phe Asp Val Leu Arg Val Gly Ala Asp
35 40 45

Asp Asp Gly Ala Ala Ala Phe Glu Arg Phe Gln Pro Phe Asp Asn Gly
50 55 60

Gly Gln Leu His Ala Val Val Gly Gly Leu Arg Phe Ala Ala Glu Lys
65 70 75 80

Phe Phe Phe Ala Ala Ala Val Ala His
85

<210> 183

<211> 270

<212> DNA

<213> *Neisseria meningitidis*

<400> 183

atgccgtccg actagagcgt cgagttcttt ccagaagtcg tcgtttttga cgggctgttt 60
ggaggcgggt ttccagccgt tgcgcttcca accgtgtatc cagttttcca tgccattttt 120
gacgtattgc gagtcggtgc agatgatgac ggtgcagcgg cgtttgagcg atttcagtcc 180
ttcgatgacg gcagtcagtt ccatgcggtt gttggtggtt tgcgcttcgc cgccgaaaag 240
ttctttttcg tggctaccgt agcgcaataa 270

<210> 184

<211> 89

<212> PRT

<213> *Neisseria meningitides*

<220>

<221> UNSURE

<222> (5)

<223> Xaa is any amino acid

<400> 184

Met Pro Ser Asp Xaa Ser Val Glu Phe Phe Pro Glu Val Val Val Phe
1 5 10 15

Asp Gly Leu Phe Gly Gly Gly Phe Pro Ala Val Ala Leu Pro Thr Val
20 25 30

Tyr Pro Val Phe His Ala Ile Phe Asp Val Leu Arg Val Gly Ala Asp

35 40 45
 Asp Asp Gly Ala Ala Ala Phe Glu Arg Phe Gln Ser Phe Asp Asp Gly
 50 55 60
 Ser Gln Phe His Ala Val Val Gly Gly Leu Arg Phe Ala Ala Glu Lys
 65 70 75 80
 Phe Phe Phe Val Ala Thr Val Ala His
 85

<210> 185
 <211> 270
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 185
 gtgccgtccg accagcgcgt cgagttcttt ccacaagtcg tcgtttttga cgggctgttt 60
 ggcggcgggt ttccagccgt tgcgcttcca accgtgtatc cagttttcca tgccgttttt 120
 gacgtattgc gagtcggtgc agatgatgac ggtgcagcgg cgtttgagcg atttcagtcc 180
 ttcgatgacg gcggtcagtt ccatacgggt gttggtggtt tgcgcttcgc cgccgaaaag 240
 ttctttttcg tggctgccgt agcgcattaa 270

<210> 186
 <211> 89
 <212> PRT
 <213> *Neisseria meningitidis*

<400> 186
 Val Pro Ser Asp Gln Arg Val Glu Phe Phe Pro Gln Val Val Val Phe
 1 5 10 15
 Asp Gly Leu Phe Gly Gly Gly Phe Pro Ala Val Ala Leu Pro Thr Val
 20 25 30
 Tyr Pro Val Phe His Ala Val Phe Asp Val Leu Arg Val Gly Ala Asp
 35 40 45
 Asp Asp Gly Ala Ala Ala Phe Glu Arg Phe Gln Ser Phe Asp Asp Gly
 50 55 60
 Gly Gln Phe His Thr Val Val Gly Gly Leu Arg Phe Ala Ala Glu Lys
 65 70 75 80
 Phe Phe Phe Val Ala Ala Val Ala His
 85

<210> 187
 <211> 561
 <212> DNA
 <213> *Neisseria gonorrhoeae*

<400> 187
 atgtcggcaa tgctgcgtcc gacaagcagc ccgccgcgcc gcgcctgtat gatgaccatc 60

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cgcacgcggt cgtctgcaaa acgtaaaacc tgcaatgcgc ccgggcagtc tatcaggccg 120
gcaagctggt cggtaacgag ctgttcgggg ctgatggttt cggttatgcc gaatatggaa 180
aggctgccgt tttcgttggt ttcgagcttg gggctgaggt attcgaggta ttcgctggaa 240
cggacgcgcg cgatgcggcc ggggatgttg aacaggtcgg cggcaacttt gcaggcgacg 300
atgttggttt cgctgcctgcg ggagagcgcg agcagcaagt cggcatcttc cgcgccggcg 360
cgttataatg tgaaggggga tgcgcggttg ccgaaaacgg tttggacatc gaggcggctg 420
cctgtttcct gcaatgcttt ttctgcgatg tcgataacgg ttacgtcgtt gttggtgatg 480
gcggcaaggt tttgcgcgac ggtagaacct acctgcccgt tgcctaaaat gaggattttc 540
acggtatggg tcgccgggtg a 561

```

<210> 188

<211> 186

<212> PRT

<213> Neisseria gonorrhoeae

<400> 188

```

Met Ser Ala Met Leu Arg Pro Thr Ser Ser Pro Pro Arg Arg Ala Cys
  1              5              10              15

```

```

Met Met Thr Ile Arg Thr Arg Ser Ser Ala Lys Arg Lys Thr Cys Asn
      20              25              30

```

```

Ala Pro Gly Gln Ser Ile Arg Pro Ala Ser Cys Ser Val Thr Ser Cys
      35              40              45

```

```

Ser Gly Leu Met Val Ser Val Met Pro Asn Met Glu Arg Leu Pro Phe
      50              55              60

```

```

Ser Leu Phe Ser Ser Leu Gly Leu Arg Tyr Ser Arg Tyr Ser Leu Glu
      65              70              75              80

```

```

Arg Thr Arg Ala Met Arg Pro Gly Met Leu Asn Arg Ser Ala Ala Thr
      85              90              95

```

```

Leu Gln Ala Thr Met Leu Val Ser Ser Leu Arg Glu Ser Ala Ser Ser
      100             105             110

```

```

Lys Ser Ala Ser Ser Ala Pro Ala Arg Tyr Asn Val Lys Gly Asp Ala
      115             120             125

```

```

Pro Leu Pro Lys Thr Val Trp Thr Ser Arg Arg Leu Pro Val Ser Cys
      130             135             140

```

```

Asn Ala Phe Ser Ser Met Ser Ile Thr Val Thr Ser Leu Leu Val Met
      145             150             155             160

```

```

Ala Ala Arg Phe Cys Ala Thr Val Glu Pro Thr Cys Pro Leu Pro Lys
      165             170             175

```

```

Met Arg Ile Phe Thr Val Trp Val Ala Gly
      180             185

```

<210> 189

<211> 559

<212> DNA

<213> Neisseria meningitidis

<400> 189

```
atgtcgga tgcgtgcgtcc gacaagcast ccgcrsgcgc gcctgtatga tgaccatccg 60
cacgcggtcg tctgcaaaac gtaaaacctg caatgcgccc gggcagtcta tcaggccggc 120
aagctgttcg gtaacgagct gttcggggct gatggtttcg gttatgccga atatggaaag 180
gctgccgttt tcgttggttt cgagcttggg gctgaggtat tcgaggtatt cgctggaacg 240
gacgcgcgcg atgcggccgg ggatgttgaa caggtcggcg gcaactttgc aggcgacgat 300
gttggtttcg tcgctgcggg agagcgcgag cagcaagtcg gcactctccg cgccggcgcg 360
ttctaattgt aagggggatg cgccgttgcc gaaaacggtt tggacatcga ggcggtgcc 420
tgtttcctgc aatgcttttt cgtcgaatgc gataacggtt acgtcgttgt tgggtatggc 480
ggcaagggtt tgtgcgacgg tagaacctac ctgtccgttg cctaaaatga ggattttcac 540
ggtgtgggtc gccgagtga 559
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<210> 190

<211> 186

<212> PRT

<213> Neisseria meningitides

<220>

<221> UNSURE

<222> (10)

<223> Xaa is any amino acid

<220>

<221> UNSURE

<222> (12)...(13)

<223> Xaa is any amino acid

<400> 190

```
Met Ser Ala Met Leu Arg Pro Thr Ser Xaa Pro Xaa Xaa Arg Ala Cys
 1           5           10           15

Met Met Thr Ile Arg Thr Arg Ser Ser Ala Lys Arg Lys Thr Cys Asn
      20           25           30

Ala Pro Gly Gln Ser Ile Arg Pro Ala Ser Cys Ser Val Thr Ser Cys
      35           40           45

Ser Gly Leu Met Val Ser Val Met Pro Asn Met Glu Arg Leu Pro Phe
      50           55           60

Ser Leu Phe Ser Ser Leu Gly Leu Arg Tyr Ser Arg Tyr Ser Leu Glu
      65           70           75           80

Arg Thr Arg Ala Met Arg Pro Gly Met Leu Asn Arg Ser Ala Ala Thr
      85           90           95

Leu Gln Ala Thr Met Leu Val Ser Ser Leu Arg Glu Ser Ala Ser Ser
      100          105          110

Lys Ser Ala Ser Ser Ala Pro Ala Arg Ser Asn Val Lys Gly Asp Ala
      115          120          125

Pro Leu Pro Lys Thr Val Trp Thr Ser Arg Arg Leu Pro Val Ser Cys
      130          135          140
```

Asn Ala Phe Ser Ser Met Ser Ile Thr Val Thr Ser Leu Leu Gly Met
 145 150 155 160

Ala Ala Arg Phe Cys Ala Thr Val Glu Pro Thr Cys Pro Leu Pro Lys
 165 170 175

Met Arg Ile Phe Thr Val Trp Val Ala Glu
 180 185

<210> 191
 <211> 561
 <212> DNA
 <213> Neisseria meningitidis

<400> 191
 atgtcggcaa tgctgcgtcc gacaagcagt ccgcccgcgc gcgcctgtat gatgaccatc 60
 cgcacgcggt cgtctgcaaa acgtaaaacc tgcaatgcgc ccgggcagtc tatcaggccg 120
 gcaagctggt cggtaacgag ctgttcgggg ctgatggttt cggttatgcc gaatatggaa 180
 aggctgccgt tttcgttgtt ttcgagcttg gggctgaggt attcgaggta ttcgctggaa 240
 cggacgcgcg cgatgcggcc ggggatgttg aacaggtcgg cggcaacttt gcaggcgacg 300
 atgttggttt cgtcgtcgcg ggagagcgcg agcagcaagt cggcatcttc cgcgccggcg 360
 cgttctaata tgaaggggga tgcgccgttg ccgaaaacgg tttggacatc gaggcggctg 420
 cctgtttcct gcaatgcttt ttcgtcgatg tcgataacgg ttacgtcgtt gttgggtatg 480

 gcggcaaggt tttgtgcgac ggtagaacct acctgtccgt tgcctaaaat gaggattttc 540
 acggtgtggg tcgccgagtg a 561

<210> 192
 <211> 186
 <212> PRT
 <213> Neisseria meningitidis

<400> 192
 Met Ser Ala Met Leu Arg Pro Thr Ser Ser Pro Pro Arg Arg Ala Cys
 1 5 10 15

 Met Met Thr Ile Arg Thr Arg Ser Ser Ala Lys Arg Lys Thr Cys Asn
 20 25 30

 Ala Pro Gly Gln Ser Ile Arg Pro Ala Ser Cys Ser Val Thr Ser Cys
 35 40 45

 Ser Gly Leu Met Val Ser Val Met Pro Asn Met Glu Arg Leu Pro Phe
 50 55 60

 Ser Leu Phe Ser Ser Leu Gly Leu Arg Tyr Ser Arg Tyr Ser Leu Glu
 65 70 75 80

 Arg Thr Arg Ala Met Arg Pro Gly Met Leu Asn Arg Ser Ala Ala Thr
 85 90 95

 Leu Gln Ala Thr Met Leu Val Ser Ser Leu Arg Glu Ser Ala Ser Ser
 100 105 110

Lys Ser Ala Ser Ser Ala Pro Ala Arg Ser Asn Val Lys Gly Asp Ala
115 120 125

Pro Leu Pro Lys Thr Val Trp Thr Ser Arg Arg Leu Pro Val Ser Cys
130 135 140

Asn Ala Phe Ser Ser Met Ser Ile Thr Val Thr Ser Leu Leu Gly Met
145 150 155 160

Ala Ala Arg Phe Cys Ala Thr Val Glu Pro Thr Cys Pro Leu Pro Lys
165 170 175

Met Arg Ile Phe Thr Val Trp Val Ala Glu
180 185

<210> 193

<211> 930

<212> DNA

<213> Neisseria gonorrhoeae

<400> 193

atggtcatca tacaggcgcg gcgcggcggg ctgcttgtcg gacgcagcat tgccgacatc 60
gccaagatt tgcccgacgg ggccgactgc caaatctgcg ccgtttaccg caacaaccgc 120
ctcatcgccc ccgcgccgca aaccgctcatc atcgaaggcg acgaaatcct gtttgccgcc 180
gccgccgaaa acatcggggc ggtcataccc gaattgcgcc ccaaagaaac cagcaccgcg 240
cgcatcatga ttgccggcgg cggaacatc tgctaccgcc tcgccaagca gctcgaacac 300
gcatacaacg tcaaaatcat cgaatgccgg ccgcgccgtg ccgaatggat agccgaaaac 360
ctcgacaaca ccctcgtcct gcaagggttcg gcaaccgacg aaaccctgct cgacaacgaa 420
tacatcgacg aaatcgacgt attctgcgcc ctgaccaacg acgacgaaag caacattatg 480
tcggcccttt tggcgaaaaa cctcggcgcg aagcgcgtca tcggcatcgt caaccgctca 540
agctacgtcg atttgctcga aggcaacaaa atcgacatcg tcgtctcccc ccacctcatc 600
accatcggtc cgatactcgc ccacatccgg cgcggcgaca tcgttgccgt ccaccccatc 660
cggcgcgcca cggcggaagc catcgaagtc gtgcgcgacg gcgacaaaaa aacttcgcc 720
atcatcgcca ggccgcatcag cggcatcaaa tggcccgaa gctgccacat tgccgccgtc 780
gtccgcgccg gaaccggcga aaccattatg ggacaccata ccgaaaccgt catccaagac 840
ggtgaccaca tcattctttt cgtctcgcgc cggcgcatcc tgaacgaact ggagaaactc 900
atccaagtca aaatgggctt ttccgataa 930

<210> 194

<211> 309

<212> PRT

<213> Neisseria gonorrhoeae

<400> 194

Met Val Ile Ile Gln Ala Arg Arg Gly Gly Leu Leu Val Gly Arg Ser
1 5 10 15

Ile Ala Asp Ile Ala Gln Asp Leu Pro Asp Gly Ala Asp Cys Gln Ile
20 25 30

Cys Ala Val Tyr Arg Asn Asn Arg Leu Ile Val Pro Ala Pro Gln Thr
35 40 45

Val Ile Ile Glu Gly Asp Glu Ile Leu Phe Ala Ala Ala Ala Glu Asn
50 55 60

Ile Gly Ala Val Ile Pro Glu Leu Arg Pro Lys Glu Thr Ser Thr Arg
 65 70 75 80
 Arg Ile Met Ile Ala Gly Gly Gly Asn Ile Cys Tyr Arg Leu Ala Lys
 85 90 95
 Gln Leu Glu His Ala Tyr Asn Val Lys Ile Ile Glu Cys Arg Pro Arg
 100 105 110
 Arg Ala Glu Trp Ile Ala Glu Asn Leu Asp Asn Thr Leu Val Leu Gln
 115 120 125
 Gly Ser Ala Thr Asp Glu Thr Leu Leu Asp Asn Glu Tyr Ile Asp Glu
 130 135 140
 Ile Asp Val Phe Cys Ala Leu Thr Asn Asp Asp Glu Ser Asn Ile Met
 145 150 155 160
 Ser Ala Leu Leu Ala Lys Asn Leu Gly Ala Lys Arg Val Ile Gly Ile
 165 170 175
 Val Asn Arg Ser Ser Tyr Val Asp Leu Leu Glu Gly Asn Lys Ile Asp
 180 185 190
 Ile Val Val Ser Pro His Leu Ile Thr Ile Gly Ser Ile Leu Ala His
 195 200 205
 Ile Arg Arg Gly Asp Ile Val Ala Val His Pro Ile Arg Arg Gly Thr
 210 215 220
 Ala Glu Ala Ile Glu Val Val Ala His Gly Asp Lys Lys Thr Ser Ala
 225 230 235 240
 Ile Ile Gly Arg Arg Ile Ser Gly Ile Lys Trp Pro Glu Gly Cys His
 245 250 255
 Ile Ala Ala Val Val Arg Ala Gly Thr Gly Glu Thr Ile Met Gly His
 260 265 270
 His Thr Glu Thr Val Ile Gln Asp Gly Asp His Ile Ile Phe Phe Val
 275 280 285
 Ser Arg Arg Arg Ile Leu Asn Glu Leu Glu Lys Leu Ile Gln Val Lys
 290 295 300
 Met Gly Phe Phe Gly
 305

<210> 195

<211> 937

<212> DNA

<213> *Neisseria meningitidis*

<400> 195

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atggtcatca tacaggcgcg csygcggast gcttgtcgga cgcagcattg ccgacatcgc 60
ccaagatttg cccgacgggg ccgactgcca aatctgcgcc gtttaccgca acaaccgcct 120
catcgtcccc gcgcgcgaaa ccgtcatcat cgaaggcgac gaaatcctat ttgccgcgc 180
cgccgaaaaac atcggcgcgg tcatacccga attgcgcccc aaagaaaccc aaagaaacca 240
gcccgmgmgc atcatgattk ccggcgggcg caacatcggc taccgtctcg ccaagcagct 300
cgaacacgca tacaacgtya aaatcatcga atgccggccg cgccgtgccg aatggatagc 360
cgaaaacctc gacaacaccc tcgtcytgca aggttcggca accgacgaaa ccctgctcga 420
caacgaatac atcgacgaaa tcgacgtatt ctgcgccctg accaacgacg acgaaagcaa 480
cattatgtcc gcccttttgg cgaaaaacct cggcgcgaaag cgcgtcatcg gcatcgtcaa 540
ccgctcaagc tacgtcgatt tgctcgaagg caacaaaatc gacatcgtcg tctcccccca 600
cctcatcacc atcggctcga tactcgcca catccggcgc ggcgacatcg ttgccgtcca 660
ccccatccgg cgcggcacgg cggaagccat cgaagtcgtc gcacacggcg acaaaaaaac 720
ttccgccatc atcggcaggg gcatcagcgg catcaaattg cccgaaggct gccacattgc 780
cgccgtcgtc cgcgccggaa ccggcgaaaac cattatggga caccataccg aaaccgtcat 840
ccaagacggc gaccacatca tctttttcgt ctgcgcggcg cgcatactga acgaactgga 900
aaaactcatc cagggtcaaaa tgggcttttt cgataa 937

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```

<210> 196
<211> 312
<212> PRT
<213> Neisseria meningitides

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<220>
<221> UNSURE
<222> (8)....(9)
<223> Xaa is any amino acid

```

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<220>
<221> UNSURE
<222> (11)
<223> Xaa is any amino acid

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```

<220>
<221> UNSURE
<222> (83)....(84)
<223> Xaa is any amino acid

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```

<220>
<221> UNSURE
<222> (88)
<223> Xaa is any amino acid

```

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<400> 196
Met Val Ile Ile Gln Ala Arg Xaa Xaa Gly Xaa Leu Val Gly Arg Ser
  1             5             10             15

Ile Ala Asp Ile Ala Gln Asp Leu Pro Asp Gly Ala Asp Cys Gln Ile
  20             25             30

Cys Ala Val Tyr Arg Asn Asn Arg Leu Ile Val Pro Ala Pro Gln Thr
  35             40             45

Val Ile Ile Glu Gly Asp Glu Ile Leu Phe Ala Ala Ala Glu Asn
  50             55             60

Ile Gly Ala Val Ile Pro Glu Leu Arg Pro Lys Glu Thr Gln Arg Asn

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65	70	75	80
Gln Pro Xaa Xaa Ile Met Ile Xaa Gly Gly Gly Asn Ile Gly Tyr Arg	85	90	95
Leu Ala Lys Gln Leu Glu His Ala Tyr Asn Val Lys Ile Ile Glu Cys	100	105	110
Arg Pro Arg Arg Ala Glu Trp Ile Ala Glu Asn Leu Asp Asn Thr Leu	115	120	125
Val Leu Gln Gly Ser Ala Thr Asp Glu Thr Leu Leu Asp Asn Glu Tyr	130	135	140
Ile Asp Glu Ile Asp Val Phe Cys Ala Leu Thr Asn Asp Asp Glu Ser	145	150	155
Asn Ile Met Ser Ala Leu Leu Ala Lys Asn Leu Gly Ala Lys Arg Val	165	170	175
Ile Gly Ile Val Asn Arg Ser Ser Tyr Val Asp Leu Leu Glu Gly Asn	180	185	190
Lys Ile Asp Ile Val Val Ser Pro His Leu Ile Thr Ile Gly Ser Ile	195	200	205
Leu Ala His Ile Arg Arg Gly Asp Ile Val Ala Val His Pro Ile Arg	210	215	220
Arg Gly Thr Ala Glu Ala Ile Glu Val Val Ala His Gly Asp Lys Lys	225	230	235
Thr Ser Ala Ile Ile Gly Arg Arg Ile Ser Gly Ile Lys Trp Pro Glu	245	250	255
Gly Cys His Ile Ala Ala Val Val Arg Ala Gly Thr Gly Glu Thr Ile	260	265	270
Met Gly His His Thr Glu Thr Val Ile Gln Asp Gly Asp His Ile Ile	275	280	285
Phe Phe Val Ser Arg Arg Arg Ile Leu Asn Glu Leu Glu Lys Leu Ile	290	295	300
Gln Val Lys Met Gly Phe Phe Gly	305	310	

<210> 197

<211> 930

<212> DNA

<213> Neisseria meningitidis

<400> 197

atggtcatca tacaggcgcg gcgcggcgga ctgcttgctg gacgcagcat tgccgacatc 60
gcccaagatt tgcccgacgg ggccgactgc caaatctgcg ccgtttaccg caacaaccgc 120

```

ctcatcgctcc ccgcgcgcga aaccgtcatc atcgaaggcg acgaaatcct atttgccgcc 180
gccgccgaaa acatcggcgc ggtcataccc gaattgcgcc ccaaagaaac cagcaccgcg 240
cgcacatga ttgccggcgg cggcaacatc ggctaccgtc tcgccaagca gctcgaacac 300
gcatacaacg tcaaaatcat cgaatgccgg ccgcgccgtg ccgaatggat agccgaaaac 360
ctcgacaaca ccctcgctct gcaaggttcg gcaaccgacg aaaccctgct cgacaacgaa 420
tacatcgacg aaatcgacgt attctgcgcc ctgaccaacg acgacgaaag caacattatg 480
tccgcccttt tggcgaaaaa cctcggcgcg aagcgcgtca tcggcatcgt caaccgctca 540
agctacgtcg atttgctcga aggcaacaaa atcgacatcg tcgtctcccc ccacctcatc 600
accatcggtc cgatactcgc ccacatccgg cgcggcgaca tcgttgccgt ccaccccatc 660
cggcgcggca cggcggaagc catcgaagtc gtgcacacg gcgacaaaaa aacttcgcc 720
atcatcgga ggcgcacag cggcatcaaa tggcccgaag gctgccacat tgccgccgtc 780
gtccgcgcg gaaccggcga aaccattatg ggacaccata ccgaaaccgt catccaagac 840
ggcgaccaca tcatcttttt cgtctcgcgc cggcgcaccc tgaacgaact ggaaaaactc 900
atccaagtca aaatgggctt tttcgataa 930

```

<210> 198

<211> 309

<212> PRT

<213> *Neisseria meningitidis*

<400> 198

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Met Val Ile Ile Gln Ala Arg Arg Gly Gly Leu Leu Val Gly Arg Ser
 1             5             10             15

Ile Ala Asp Ile Ala Gln Asp Leu Pro Asp Gly Ala Asp Cys Gln Ile
 20             25             30

Cys Ala Val Tyr Arg Asn Asn Arg Leu Ile Val Pro Ala Pro Gln Thr
 35             40             45

Val Ile Ile Glu Gly Asp Glu Ile Leu Phe Ala Ala Ala Glu Asn
 50             55             60

Ile Gly Ala Val Ile Pro Glu Leu Arg Pro Lys Glu Thr Ser Thr Arg
 65             70             75             80

Arg Ile Met Ile Ala Gly Gly Gly Asn Ile Gly Tyr Arg Leu Ala Lys
 85             90             95

Gln Leu Glu His Ala Tyr Asn Val Lys Ile Ile Glu Cys Arg Pro Arg
100             105             110

Arg Ala Glu Trp Ile Ala Glu Asn Leu Asp Asn Thr Leu Val Leu Gln
115             120             125

Gly Ser Ala Thr Asp Glu Thr Leu Leu Asp Asn Glu Tyr Ile Asp Glu
130             135             140

Ile Asp Val Phe Cys Ala Leu Thr Asn Asp Asp Glu Ser Asn Ile Met
145             150             155             160

Ser Ala Leu Leu Ala Lys Asn Leu Gly Ala Lys Arg Val Ile Gly Ile
165             170             175

Val Asn Arg Ser Ser Tyr Val Asp Leu Leu Glu Gly Asn Lys Ile Asp
180             185             190

```

Ile Val Val Ser Pro His Leu Ile Thr Ile Gly Ser Ile Leu Ala His
 195 200 205
 Ile Arg Arg Gly Asp Ile Val Ala Val His Pro Ile Arg Arg Gly Thr
 210 215 220
 Ala Glu Ala Ile Glu Val Val Ala His Gly Asp Lys Lys Thr Ser Ala
 225 230 235 240
 Ile Ile Gly Arg Arg Ile Ser Gly Ile Lys Trp Pro Glu Gly Cys His
 245 250 255
 Ile Ala Ala Val Val Arg Ala Gly Thr Gly Glu Thr Ile Met Gly His
 260 265 270
 His Thr Glu Thr Val Ile Gln Asp Gly Asp His Ile Ile Phe Phe Val
 275 280 285
 Ser Arg Arg Arg Ile Leu Asn Glu Leu Glu Lys Leu Ile Gln Val Lys
 290 295 300
 Met Gly Phe Phe Gly
 305

<210> 199
 <211> 453
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 199
 atgctcgaca aaggcgagga gttgcccgtc gatttcacca accgcctgat ttactacgtc 60
 ggccccgtcg atccggtcgg cgatgaagtc gtcggtcccg caggtcgcac cacagccacc 120
 cgcattggaca aatttaccgg ccaaagtctc aaacaaaccg gcctcttggg catgatcggc 180
 aaatccgagc gcggcgcggc cacctgcgaa gccatcgccg acaacaaggc cgtgtacctc 240
 atggcagtcg gcggcgcggc atacctcgtg gcaaaagcca tcaaattctc caaagtcttg 300
 gcgttccccg aattgggtat ggaagccgtt tacgaatttg aagtcaaaga tatgcccgtg 360
 accgtcgccg tggacagcaa aggcgaatcc atccacgcca ccgccccgcg caaatggcag 420
 gcgaaaatcg gcatcatccc cgtcgagtct tga 453

<210> 200
 <211> 150
 <212> PRT
 <213> Neisseria gonorrhoeae

<400> 200
 Met Leu Asp Lys Gly Glu Glu Leu Pro Val Asp Phe Thr Asn Arg Leu
 1 5 10 15
 Ile Tyr Tyr Val Gly Pro Val Asp Pro Val Gly Asp Glu Val Val Gly
 20 25 30
 Pro Ala Gly Pro Thr Thr Ala Thr Arg Met Asp Lys Phe Thr Arg Gln
 35 40 45

Met Leu Lys Gln Thr Gly Leu Leu Gly Met Ile Gly Lys Ser Glu Arg
50 55 60

Gly Ala Ala Thr Cys Glu Ala Ile Ala Asp Asn Lys Ala Val Tyr Leu
65 70 75 80

Met Ala Val Gly Gly Ala Ala Tyr Leu Val Ala Lys Ala Ile Lys Ser
85 90 95

Ser Lys Val Leu Ala Phe Pro Glu Leu Gly Met Glu Ala Val Tyr Glu
100 105 110

Phe Glu Val Lys Asp Met Pro Val Thr Val Ala Val Asp Ser Lys Gly
115 120 125

Glu Ser Ile His Ala Thr Ala Pro Arg Lys Trp Gln Ala Lys Ile Gly
130 135 140

Ile Ile Pro Val Glu Ser
145 150

<210> 201
<211> 453
<212> DNA
<213> Neisseria meningitidis

<400> 201
atgtcacaaga aaggcgaaga attgcccgtc gatttcacca accgcctgat ttactacgtc 60
ggccccgtcg atccgggtcgg cgatgaagtc gtcgggtccgg cagggtccgac cacagccacc 120
cgcattggaca aattcaccgg ccaaattgctc gaacaaaccg acctcttggg catgatcggc 180
aaatccgagc gcggcgtggc cacctgcgaa gccatcgccg acaacaaagc cgtgtacctc 240
atggcagtcg gcggcgcggc gtatctcgtg gcaaaagcca tcaaattctc caaagtcttg 300
gcgttccccg aattgggcat ggaagccatt tacgaatttg aagtcaaaga catgcccgtg 360
accgtcgccg tagatagcaa aggcgaatcc atccacgcca ccgccccgcg caaatggcag 420
gcgaaaatcg gcatcatccc cgtcgaatct tga 453

<210> 202
<211> 150
<212> PRT
<213> Neisseria meningitidis

<400> 202
Met Leu Asn Lys Gly Glu Glu Leu Pro Val Asp Phe Thr Asn Arg Leu
1 5 10 15

Ile Tyr Tyr Val Gly Pro Val Asp Pro Val Gly Asp Glu Val Val Gly
20 25 30

Pro Ala Gly Pro Thr Thr Ala Thr Arg Met Asp Lys Phe Thr Arg Gln
35 40 45

Met Leu Glu Gln Thr Asp Leu Leu Gly Met Ile Gly Lys Ser Glu Arg
50 55 60

Gly Val Ala Thr Cys Glu Ala Ile Ala Asp Asn Lys Ala Val Tyr Leu

Ser Lys Val Leu Ala Phe Pro Glu Leu Gly Met Glu Ala Ile Tyr Glu
100 105 110

Phe Glu Val Lys Asp Met Pro Val Thr Val Ala Val Asp Ser Lys Gly
115 120 125

Glu Ser Ile His Ala Thr Ala Pro Pro Gln Trp Gln Ala Lys Ile Gly
130 135 140

Ile Ile Pro Val Lys Ser
145 150

<210> 205

<211> 420

<212> DNA

<213> Neisseria gonorrhoeae

<400> 205

atgcggggcgc aggcggttga tcaaccgttc ggtcagctcc tggtcggaca ggcagaacac 60
ttcgcgcggg ttgacggctt tcgggttcag gatattgatt tggacgggca tcaacgcctc 120
ttccgcaccg ccttcgccgt ttcccgcaac cccgtctgcc gccgtaccg attctgccgc 180
atcgcggttt tccccgccct caatctgtgc gggttcaaatt cgggcactgt cttttttggc 240
atcgaaccgg attctccgcc gcgattcgat gtgtttttcc gaaaccggca ttgcagggga 300
agcctgcgcg ttgagccagt ttccctgaag gacgatcatc gggtcgggtt cgacttcctc 360
gccgcaatcg gcaacggcgc tgttgtgttc ttctgccat ttcttcagat acgcctttaa 420

<210> 206

<211> 139

<212> PRT

<213> Neisseria gonorrhoeae

<400> 206

Met Arg Ala Gln Ala Phe Asp Gln Pro Phe Gly Gln Leu Leu Phe Gly
1 5 10 15

Gln Ala Glu His Phe Ala Pro Val Asp Gly Phe Arg Val Gln Asp Ile
20 25 30

Asp Leu Asp Gly His Gln Arg Leu Phe Arg Thr Ala Phe Ala Val Phe
35 40 45

Arg Asn Pro Val Cys Arg Arg Thr Gly Phe Cys Arg Ile Gly Val Phe
50 55 60

Pro Ala Leu Asn Leu Cys Gly Phe Lys Phe Gly Thr Val Phe Phe Gly
65 70 75 80

Ile Glu Pro Asp Ser Pro Pro Arg Phe Asp Val Phe Phe Arg Asn Arg
85 90 95

His Leu Gln Gly Ser Leu Arg Val Glu Pro Val Phe Leu Lys Asp Asp
100 105 110

His Arg Val Gly Phe Asp Phe Leu Ala Ala Ile Gly Asn Gly Ala Val

115

120

125

Val Phe Phe Leu Pro Phe Leu Gln Ile Arg Leu
 130 135

<210> 207

<211> 417

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 207

atgcggggcgc aggcggttga tcagccgttc ggtcagctcc tgttcggaca ggcagaacac 60
 ttgcgcgccg ttgacggctt tcgggttcag gatattgatt tggacgggca tcaacgtttc 120
 ttccgcatcg ttttccccgt ttccgaaac cgccggctca ttcgtgccgg attctgcctc 180
 gtccggcggtt tccccgcttt caatctgtcc ggtttcaaat tcgacactgt cttttttggt 240
 atcaaaccgg attctccgcc gcgattcgat gtgtttttcc gaaaccgaca tttgcaggga 300
 agcctgcgcg ttgagccagt tttcctgaag gacgatcatc gggtcgggtt cgacttcctc 360
 gccgcaatcg gcaacggcgg cattgtgttc ctctgccat tttttcagat acgcctt 417

<210> 208

<211> 139

<212> PRT

<213> *Neisseria meningitidis*

<400> 208

Met Arg Ala Gln Ala Phe Asp Gln Pro Phe Gly Gln Leu Leu Phe Gly
 1 5 10 15

Gln Ala Glu His Phe Ala Pro Val Asp Gly Phe Arg Val Gln Asp Ile
 20 25 30

Asp Leu Asp Gly His Gln Arg Phe Phe Arg Ile Val Phe Pro Val Phe
 35 40 45

Arg Asn Arg Arg Leu Ile Arg Ala Gly Phe Cys Leu Val Gly Val Phe
 50 55 60

Pro Ala Phe Asn Leu Ser Gly Phe Lys Phe Asp Thr Val Phe Phe Gly
 65 70 75 80

Ile Lys Pro Asp Ser Pro Pro Arg Phe Asp Val Phe Phe Arg Asn Arg
 85 90 95

His Leu Gln Gly Ser Leu Arg Val Glu Pro Val Phe Leu Lys Asp Asp
 100 105 110

His Arg Val Gly Phe Asp Phe Leu Ala Ala Ile Gly Asn Gly Gly Ile
 115 120 125

Val Phe Leu Leu Pro Phe Phe Gln Ile Arg Leu
 130 135

<210> 209

<211> 417
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 209
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 ttcgcgcccg ttgacggctt tcgggttcag aatattgatt tggacgggca tcaacgcttc 120
 ttccgcaccg ccttcgccgt ttccgcgaac cccgtctgcc gccgtaccg attctgccgc 180
 atcggcggtt tccccgcctt caatctgtcc ggtttcaa atcggcactgt cttttttggc 240
 atcaaaccgg attctccgcc gcgattcgat gtgtttttcc gaaaccgaca ttgacaggga 300
 agcctgcgcg ttgagccagt ttccctgaag gacgatcatc gggtcgggtt cgacttcctc 360
 gccgcaatcg gcaacggcgg cattgtgttc ctctgccat tttttcagat acgcctt 417

<210> 210
 <211> 139
 <212> PRT
 <213> *Neisseria meningitidis*

<400> 210
 Met Arg Ala Gln Ala Phe Asp Gln Pro Phe Gly Gln Leu Leu Phe Gly
 1 5 10 15
 Gln Ala Glu His Phe Ala Pro Val Asp Gly Phe Arg Val Gln Asn Ile
 20 25 30
 Asp Leu Asp Gly His Gln Arg Phe Phe Arg Thr Ala Phe Ala Val Phe
 35 40 45
 Arg Asn Pro Val Cys Arg Arg Thr Arg Phe Cys Arg Ile Gly Val Phe
 50 55 60
 Pro Ala Phe Asn Leu Ser Gly Phe Lys Phe Gly Thr Val Phe Phe Gly
 65 70 75 80
 Ile Lys Pro Asp Ser Pro Pro Arg Phe Asp Val Phe Phe Arg Asn Arg
 85 90 95
 His Leu Gln Gly Ser Leu Arg Val Glu Pro Val Phe Leu Lys Asp Asp
 100 105 110
 His Arg Val Gly Phe Asp Phe Leu Ala Ala Ile Gly Asn Gly Gly Ile
 115 120 125
 Val Phe Leu Leu Pro Phe Phe Gln Ile Arg Leu
 130 135

<210> 211
 <211> 384
 <212> DNA
 <213> *Neisseria gonorrhoeae*

<400> 211
 atgggcgcgg gctgggtgtcc tcccggcatc ttgggcatcg gcatcggcgg caccgccgaa 60
 aaagccgtgt tgatggcaaa agaatccctg atgagccaca tcgacatcca agaattgcag 120

gaaaaagccg cgtccggggc ggaattgtcc accaccgaag ccctgcgcct cgaactcttt 180

gaaaagggtca acgcgctggg catcggcgcg caaggcttgg gcggtctgac caccgtgttg 240
gacgtgaaaa tcctcgatta cccgacccat gccgcctcca aaccgattgc catgattccc 300
aactgtgccg ccaccgcca cgtcgaattt gaattggacg gtcagggtcc tgtcgaactc 360
acgccgccgc gtgtcgaaga ctga 384

<210> 212

<211> 127

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 212

Met Gly Ala Gly Trp Cys Pro Pro Gly Ile Leu Gly Ile Gly Ile Gly
1 5 10 15

Gly Thr Pro Glu Lys Ala Val Leu Met Ala Lys Glu Ser Leu Met Ser
20 25 30

His Ile Asp Ile Gln Glu Leu Gln Glu Lys Ala Ala Ser Gly Ala Glu
35 40 45

Leu Ser Thr Thr Glu Ala Leu Arg Leu Glu Leu Phe Glu Lys Val Asn
50 55 60

Ala Leu Gly Ile Gly Ala Gln Gly Leu Gly Gly Leu Thr Thr Val Leu
65 70 75 80

Asp Val Lys Ile Leu Asp Tyr Pro Thr His Ala Ala Ser Lys Pro Ile
85 90 95

Ala Met Ile Pro Asn Cys Ala Ala Thr Arg His Val Glu Phe Glu Leu
100 105 110

Asp Gly Ser Gly Pro Val Glu Leu Thr Pro Pro Arg Val Glu Asp
115 120 125

<210> 213

<211> 393

<212> DNA

<213> *Neisseria meningitidis*

<400> 213

atggggcgcg gctggtgtcc tcccggcatt ttgggtatcg gcatcgcgcg cagccgaaaa 60
agccgtgctg atggcaaaa agtccctgat gagccacatc gacattcaag aattgcagga 120
aaaggcgcgg tccggcgcgg aattgtccac caccgaagcc ctgcgcctcg aactctttga 180
aaaagtcaac gcgctggg0c atcggcgcac aaggcttggg cggactgacc accgtgttgg 240
acgtgaaaaat cctcgattat ccgacccacg ccgcctocaa accgattgcc atgattccg0 300
aactgcgcgg ccaccgcca cgtcgaattt gaattggacg gtcaggccc tgtcgaactc 360
acgccgccgc gcgtcgaaga tggcccatt tga 393

<210> 214

<211> 130

<212> PRT

<213> Neisseria meningitidis

<400> 214

Met Gly Ala Gly Trp Cys Pro Pro Gly Ile Leu Gly Ile Gly Ile Gly
1 5 10 15

Gly Xaa Ala Glu Lys Ala Val Leu Met Ala Lys Glu Ser Leu Met Ser
20 25 30

His Ile Asp Ile Gln Glu Leu Gln Glu Lys Ala Ala Ser Gly Ala Glu
35 40 45

Leu Ser Thr Thr Glu Ala Leu Arg Leu Glu Leu Phe Glu Lys Val Asn
50 55 60

Ala Leu Gly Ile Gly Ala Gln Gly Leu Gly Gly Leu Thr Thr Val Leu
65 70 75 80

Asp Val Lys Ile Leu Asp Tyr Pro Thr His Ala Ala Ser Lys Pro Ile
85 90 95

Ala Met Ile Pro Asn Cys Ala Ala Thr Arg His Val Glu Phe Glu Leu
100 105 110

Asp Gly Ser Gly Pro Val Glu Leu Thr Pro Pro Arg Val Glu Asp Gly
115 120 125

Pro Ile
130

<210> 215

<211> 387

<212> DNA

<213> Neisseria meningitidis

<400> 215

atgggcgcgg gctggtgtcc tcccggcatc ttgggcatcg gcatcggcgg tacgcccga 60
aaagccgtgt tgatggcgaa agaatccctg atgagccaca tcgacatcca agaattgcag 120
gaaaaagccg cgtccggcgc ggaattgtcc accaccgaag ccctgcgcct cgaactcttt 180
gaaaaagtca acgcgctagg catcggcgcg caaggcttgg gcggtctgac caccgtgttg 240
gacgtgaaaa tctcgtatta cccgaccac gccgcctcca aaccgattgc catgattccg 300
aactgcgccg ccaccgcca cgtcgaattt gaattggacg gtcaggccc tgcgaactc 360
acgccgccgc gcgtcgaaga ctggccc 387

<210> 216

<211> 129

<212> PRT

<213> Neisseria meningitidis

<400> 216

Met Gly Ala Gly Trp Cys Pro Pro Gly Ile Leu Gly Ile Gly Ile Gly
1 5 10 15

Gly Thr Pro Glu Lys Ala Val Leu Met Ala Lys Glu Ser Leu Met Ser
20 25 30

His Ile Asp Ile Gln Glu Leu Gln Glu Lys Ala Ala Ser Gly Ala Glu
 35 40 45
 Leu Ser Thr Thr Glu Ala Leu Arg Leu Glu Leu Phe Glu Lys Val Asn
 50 55 60
 Ala Leu Gly Ile Gly Ala Gln Gly Leu Gly Gly Leu Thr Thr Val Leu
 65 70 75 80
 Asp Val Lys Ile Leu Asp Tyr Pro Thr His Ala Ala Ser Lys Pro Ile
 85 90 95
 Ala Met Ile Pro Asn Cys Ala Ala Thr Arg His Val Glu Phe Glu Leu
 100 105 110
 Asp Gly Ser Gly Pro Val Glu Leu Thr Pro Pro Arg Val Glu Asp Trp
 115 120 125

Pro

<210> 217
 <211> 1524
 <212> DNA
 <213> *Neisseria gonorrhoeae*

<400> 217
 atgaccgtta tcaagcaaga agactttatt caaagtatct gcgatgcctt ccaattcatc 60
 agctactacc atccaaaaga ctacatcgac gcgctttata aggcgtggca gaaggaagaa 120
 aatcccgcgc ccaaagacgc gatgacgcag attttggtca acagccgtat gtgtgccgaa 180
 aacaaccgcc ccatctgcc aagacacaggt atcgcaaccg tcttctctcaa agtcggtatg 240
 gatgtgcaat gggatgcgga catgagcgtg gaaaagatgg ttaacgaagg cgtacgccgc 300
 gcctacactt ggggaaggcaa caccctgcgc gcttccgtcc tcgccgatcc ggccggcaaa 360
 cgccaaaaca ccaaagacaa cacccccgc gtcattccaca tgagcatcgt gccgggcggt 420
 aaagtcgaag taacctgcgc ggcaaaaggc ggcggtctctg aaaacaaatc caaactcgt 480
 atgctcaacc cttccgacaa catcgtcgat tgggtattga aaacctccc gacgatgggc 540
 gcgggctggt gtcctcccgc catcttgggc atcggcacgc gcggcacgcc cgaaaaagcc 600
 gtgttgatgg cgaaagaatc cctgatgagc cacatcgaca tccaagaatt gcaggaaaaa 660
 gccgcgtccg gcgcggaatt gtccaccacc gaagccctgc gcctcgaact ctttgaaaag 720
 gtcaacgcgc tgggcatcgc cgcgcaaggc ttgggcgggc tgaccaccgt gttggacgtg 780
 aaaatcctcg attaccgcgc ccatgcgcgc tccaaaccga ttgccatgat tcccaactgt 840
 gccgccaccc gccacgtcga atttgaattg gacggctcag gtcctgtcga actcacgccg 900
 ccgcgcgtcg aagactgacc cgatctgact tacagccccg acaacggcaa acgcgtcgat 960
 gtcgataagc tgaccaaaga agaagtggca agctggaaaa ccggcgacgt attgctgttg 1020
 aacggcaaaa tctcaccgcg ccgcgatgcc gcgcacaaac gcctcgtcaa tatgctcgac 1080
 aaaggcgagg agttgcccggt cgatttcacc aaccgcctga ttactacgt cggccccgtc 1140
 gatccgggtcg gcgatgaagt cgtcgtgccc gcaggtccga ccacagccac ccgcatggac 1200
 aaatttacc 'gccaaatgct caaacaaccc ggctcttg gcatgatcgg caaatccgag 1260
 cgccggcgcg ccacctgcga agccatcgcc gacaacaagg ccgtgtacct catggcagtc 1320
 ggccggcgcg catacctcgt ggcaaaagcc atcaaatctt ccaaagtctt ggcgttcccc 1380
 gaattgggta tgggaagcgt ttacgaattt gaagtcaaag atatgcccggt aaccgtcgcc 1440
 gtggacagca aaggcgaatc catccacgcc accgccccgc gcaaatggca ggcgaaaatc 1500
 ggcattcatc ccgtcgagtc ttga 1524

<210> 218
 <211> 506
 <212> PRT
 <213> *Neisseria gonorrhoeae*

<400> 218

Met	Thr	Val	Ile	Lys	Gln	Glu	Asp	Phe	Ile	Gln	Ser	Ile	Cys	Asp	Ala	1	5	10	15
Phe	Gln	Phe	Ile	Ser	Tyr	Tyr	His	Pro	Lys	Asp	Tyr	Ile	Asp	Ala	Leu	20	25	30	
Tyr	Lys	Ala	Trp	Gln	Lys	Glu	Glu	Asn	Pro	Ala	Ala	Lys	Asp	Ala	Met	35	40	45	
Thr	Gln	Ile	Leu	Val	Asn	Ser	Arg	Met	Cys	Ala	Glu	Asn	Asn	Arg	Pro	50	55	60	
Ile	Cys	Gln	Asp	Thr	Gly	Ile	Ala	Thr	Val	Phe	Leu	Lys	Val	Gly	Met	65	70	75	
Asp	Val	Gln	Trp	Asp	Ala	Asp	Met	Ser	Val	Glu	Lys	Met	Val	Asn	Glu	85	90	95	
Gly	Val	Arg	Arg	Ala	Tyr	Thr	Trp	Glu	Gly	Asn	Thr	Leu	Arg	Ala	Ser	100	105	110	
Val	Leu	Ala	Asp	Pro	Ala	Gly	Lys	Arg	Gln	Asn	Thr	Lys	Asp	Asn	Thr	115	120	125	
Pro	Ala	Val	Ile	His	Met	Ser	Ile	Val	Pro	Gly	Gly	Lys	Val	Glu	Val	130	135	140	
Thr	Cys	Ala	Ala	Lys	Gly	Gly	Gly	Ser	Glu	Asn	Lys	Ser	Lys	Leu	Ala	145	150	155	
Met	Leu	Asn	Pro	Ser	Asp	Asn	Ile	Val	Asp	Trp	Val	Leu	Lys	Thr	Ile	165	170	175	
Pro	Thr	Met	Gly	Ala	Gly	Trp	Cys	Pro	Pro	Gly	Ile	Leu	Gly	Ile	Gly	180	185	190	
Ile	Gly	Gly	Thr	Pro	Glu	Lys	Ala	Val	Leu	Met	Ala	Lys	Glu	Ser	Leu	195	200	205	
Met	Ser	His	Ile	Asp	Ile	Gln	Glu	Leu	Gln	Glu	Lys	Ala	Ala	Ser	Gly	210	215	220	
Ala	Glu	Leu	Ser	Thr	Thr	Glu	Ala	Leu	Arg	Leu	Glu	Leu	Phe	Glu	Lys	225	230	235	
Val	Asn	Ala	Leu	Gly	Ile	Gly	Ala	Gln	Gly	Leu	Gly	Gly	Leu	Thr	Thr	245	250	255	
Val	Leu	Asp	Val	Lys	Ile	Leu	Asp	Tyr	Pro	Thr	His	Ala	Ala	Ser	Lys	260	265	270	

Pro Ile Ala Met Ile Pro Asn Cys Ala Ala Thr Arg His Val Glu Phe
 275 280 285
 Glu Leu Asp Gly Ser Gly Pro Val Glu Leu Thr Pro Pro Arg Val Glu
 290 295 300
 Asp Pro Asp Leu Thr Tyr Ser Pro Asp Asn Gly Lys Arg Val Asp Val
 305 310 315 320
 Asp Lys Leu Thr Lys Glu Glu Val Ala Ser Trp Lys Thr Gly Asp Val
 325 330 335
 Leu Leu Leu Asn Gly Lys Ile Leu Thr Gly Arg Asp Ala Ala His Lys
 340 345 350
 Arg Leu Val Asn Met Leu Asp Lys Gly Glu Glu Leu Pro Val Asp Phe
 355 360 365
 Thr Asn Arg Leu Ile Tyr Tyr Val Gly Pro Val Asp Pro Val Gly Asp
 370 375 380
 Glu Val Val Gly Pro Ala Gly Pro Thr Thr Ala Thr Arg Met Asp Lys
 385 390 395 400
 Phe Thr Arg Gln Met Leu Lys Gln Thr Gly Leu Leu Gly Met Ile Gly
 405 410 415
 Lys Ser Glu Arg Gly Ala Ala Thr Cys Glu Ala Ile Ala Asp Asn Lys
 420 425 430
 Ala Val Tyr Leu Met Ala Val Gly Gly Ala Ala Tyr Leu Val Ala Lys
 435 440 445
 Ala Ile Lys Ser Ser Lys Val Leu Ala Phe Pro Glu Leu Gly Met Glu
 450 455 460
 Ala Val Tyr Glu Phe Glu Val Lys Asp Met Pro Val Thr Val Ala Val
 465 470 475 480
 Asp Ser Lys Gly Glu Ser Ile His Ala Thr Ala Pro Arg Lys Trp Gln
 485 490 495
 Ala Lys Ile Gly Ile Ile Pro Val Glu Ser
 500 505

<210> 219

<211> 1524

<212> DNA

<213> Neisseria meningitidis

<400> 219

atgaccgtca tcaaacagga agactttatc caaagcattt gcgatgcctt ccaattcatc 60
 agctactatc atcccaaaga ctacatcgac gcgctttata aggcgtggca gaaggaagaa 120
 aatcctgccg ccaaagacgc gatgacgcag attttgggtca acagccgtat gtgtgcggaa 180
 aacaaccgcc ccattctgcca agacacaggt atcgcaaccg tcttctctcaa agtcgggtatg 240

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aacgtccaat gggatgcgga catgagcgtg gaagagatgg ttaacgaagg cgtacgccgc 300
gcctacactt gggaaggcaa tacgtgctgc gtttccgtcc tcgccgatcc ggccggcaaa 360
cgccaaaaca ccaaagacaa ccccccgcc gtcattcata tgagcatcgt gccgggcggt 420
aaagtccaag taacctgctg ggcaaaaggc ggcggtcttg aaaacaaatc caactcgcc 480
atgctcaatc cttccgacaa catcgctgat tgggtattga aaaccatccc gaccatgggc 540
gcggtctggt gtcctcccgg catcttgggt atcggcatcg gcggcacgcc cgaaaaagcc 600
gtgctgatgg caaaagagtc cctgatgagc cacatcgaca ttcaagaatt gcaggaaaag 660
gccggtccg gcgcggaatt gtccaccacc gaagccctgc gcctcgaact ctttgaaaaa 720
gtcaacgcgc tgggcatcgg cgcacaaggc ttgggcggac tgaccaccgt gttggacgtg 780
aaaatcctcg attatccgac ccacgcgcc tccaaaccga ttgccatgat tccgaactgc 840
gccgccccc gccacgtcga atttgaattg gacggctcag gccctgtcga actcacgccg 900
ccgcgcgtcg aagactggcc cgatttgact tacagccccg acaacggcaa acgcgtcgat 960
gtcgacaagc tgaccaaaga agaagtggca agctggaaaa ccggcgacgt attgctgttg 1020
aacggcaaaa tcctcaccgg ccgcgatgcc gcacacaaac gcctcgtcga tatgctcaac 1080
aaaggcgaag aattgcccgt cgatttcacc aaccgcctga ttactacgt cggccccgtc 1140
gatccggtcg gcgatgaagt cgtcgggtccg gcaggtccga ccacagccac ccgcatggac 1200
aaattcaccc gccaaatgct cgaacaaacc gacctcttg gcattgatcg caaatccgag 1260
cgcggtgtgg ccacctgcga agccatcgcc gacaacaaag ccgtgtacct catggcagtc 1320
ggcggtcgcg cgtatctcgt ggcaaaagcc atcaaatctt ccaaagtctt ggctgtcccc 1380
gaattgggca tggaagccat ttacgaattt gaagtcaaag acatgcccg aaccgtcgcc 1440
gtagatagca aaggcgaatc catccacgcc accgccccgc gcaaatggca ggcgaaaaatc 1500
ggcatcatcc ccgtcgaatc ttga                                     1524

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<210> 220

<211> 507

<212> PRT

<213> *Neisseria meningitidis*

<400> 220

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Met Thr Val Ile Lys Gln Glu Asp Phe Ile Gln Ser Ile Cys Asp Ala
  1             5             10            15

Phe Gln Phe Ile Ser Tyr Tyr His Pro Lys Asp Tyr Ile Asp Ala Leu
  20             25            30

Tyr Lys Ala Trp Gln Lys Glu Glu Asn Pro Ala Ala Lys Asp Ala Met
  35             40            45

Thr Gln Ile Leu Val Asn Ser Arg Met Cys Ala Glu Asn Asn Arg Pro
  50             55            60

Ile Cys Gln Asp Thr Gly Ile Ala Thr Val Phe Leu Lys Val Gly Met
  65             70            75            80

Asn Val Gln Trp Asp Ala Asp Met Ser Val Glu Glu Met Val Asn Glu
  85             90            95

Gly Val Arg Arg Ala Tyr Thr Trp Glu Gly Asn Thr Leu Arg Ala Ser
 100            105            110

Val Leu Ala Asp Pro Ala Gly Lys Arg Gln Asn Thr Lys Asp Asn Thr
 115            120            125

Pro Ala Val Ile His Met Ser Ile Val Pro Gly Gly Lys Val Glu Val
 130            135            140

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Thr Cys Ala Ala Lys Gly Gly Gly Ser Glu Asn Lys Ser Lys Leu Ala
 145 150 155 160
 Met Leu Asn Pro Ser Asp Asn Ile Val Asp Trp Val Leu Lys Thr Ile
 165 170 175
 Pro Thr Met Gly Ala Gly Trp Cys Pro Pro Gly Ile Leu Gly Ile Gly
 180 185 190
 Ile Gly Gly Thr Pro Glu Lys Ala Val Leu Met Ala Lys Glu Ser Leu
 195 200 205
 Met Ser His Ile Asp Ile Gln Glu Leu Gln Glu Lys Ala Ala Ser Gly
 210 215 220
 Ala Glu Leu Ser Thr Thr Glu Ala Leu Arg Leu Glu Leu Phe Glu Lys
 225 230 235 240
 Val Asn Ala Leu Gly Ile Gly Ala Gln Gly Leu Gly Gly Leu Thr Thr
 245 250 255
 Val Leu Asp Val Lys Ile Leu Asp Tyr Pro Thr His Ala Ala Ser Lys
 260 265 270
 Pro Ile Ala Met Ile Pro Asn Cys Ala Ala Thr Arg His Val Glu Phe
 275 280 285
 Glu Leu Asp Gly Ser Gly Pro Val Glu Leu Thr Pro Pro Arg Val Glu
 290 295 300
 Asp Trp Pro Asp Leu Thr Tyr Ser Pro Asp Asn Gly Lys Arg Val Asp
 305 310 315 320
 Val Asp Lys Leu Thr Lys Glu Glu Val Ala Ser Trp Lys Thr Gly Asp
 325 330 335
 Val Leu Leu Leu Asn Gly Lys Ile Leu Thr Gly Arg Asp Ala Ala His
 340 345 350
 Lys Arg Leu Val Asp Met Leu Asn Lys Gly Glu Glu Leu Pro Val Asp
 355 360 365
 Phe Thr Asn Arg Leu Ile Tyr Tyr Val Gly Pro Val Asp Pro Val Gly
 370 375 380
 Asp Glu Val Val Gly Pro Ala Gly Pro Thr Thr Ala Thr Arg Met Asp
 385 390 395 400
 Lys Phe Thr Arg Gln Met Leu Glu Gln Thr Asp Leu Leu Gly Met Ile
 405 410 415
 Gly Lys Ser Glu Arg Gly Val Ala Thr Cys Glu Ala Ile Ala Asp Asn
 420 425 430
 Lys Ala Val Tyr Leu Met Ala Val Gly Gly Ala Ala Tyr Leu Val Ala
 435 440 445

Lys Ala Ile Lys Ser Ser Lys Val Leu Ala Phe Pro Glu Leu Gly Met
 450 455 460

Glu Ala Ile Tyr Glu Phe Glu Val Lys Asp Met Pro Val Thr Val Ala
 465 470 475 480

Val Asp Ser Lys Gly Glu Ser Ile His Ala Thr Ala Pro Arg Lys Trp
 485 490 495

Gln Ala Lys Ile Gly Ile Ile Pro Val Glu Ser
 500 505

<210> 221

<211> 1524

<212> DNA

<213> Neisseria meningitidis

<400> 221

atgaccgtca tcaaacagga agactttatc caaagcattt gcgatgcctt ccaattcatc 60
 agctactacc atcccaaaga ctacatcgac gcgctttata aggcgtggca gaaggaagaa 120
 aaccccgccg ccaaagacgc gatgacgcag attttgggtca acagccgcat gtgtgccgaa 180

aacaaccgcc ccattctgcca agataccgggt atcgcgaccg tgtttttgaa agtcggtatg 240
 gatgtgcaat gggatgcaga catgagcgtc gaagagatgg ttaacgaagg cgtgcgccgc 300
 gcctacactt gggaaaggcaa tacgctgcgc gcttccgttc tcgccgaccc cgccggcaaa 360
 cgccaaaata ccaaagacaa cacgcccgcg gtcatccata tgagcatcgt gccgggacgac 420
 aaagtcgaag taacttgcgc ggcaaaaggc ggcggttctg aaaacaaatc caaactcgcc 480
 atgtcaacc ctccgacaa catcgtcgat tgggtattga aaaccattcc gaccatgggc 540
 gcgggctggt gtccctcccg catcttgggc atcggcatcg gcggtacgcc cgaaaaagcc 600
 gtgttgatgg cgaaagaatc cctgatgagc cacatcgaca tccaagaatt gcaggaaaaa 660
 gcgcgctccg gcgcggaatt gtccaccacc gaagccctgc gcctcgaact ctttgaaaaa 720
 gtcaacgcgc taggcacgag cgcgcaaggc ttgggcggtc tgaccaccgt gttggacgtg 780
 aaaatcctcg attaccgcgac ccacgcgcgc tccaaaccga ttgccatgat tccgaactgc 840
 gccgccaccc gccacgtcga atttgaattg gacggctcag gccctgtcga actcacgccg 900
 ccgcgcgtcg aagactggcc cgatttgact tacagccccg acaacggcaa acgcgtcgat 960
 gtgcacaagc tgaccaaaga agaagtggca agctggaaaa ccggcgacgt attgctgttg 1020
 aacggcaaaa tcctcaccgg ccgcgatgcc gcacacaaac gcctcgtcga tatgctcgac 1080
 aaaggcgaag aattgcccggt cgatttcacc aaccgcctga ttactacgt cggccccgctc 1140
 gatccggtcg gcgacgaaat cgtcggccca gcaggctcga ccaccgccac ccgcatggac 1200
 aaattcaccg gccaaatgct cgaacaaacc gacctcttgg gcatgatcgg caaatccgag 1260
 cgcggcgcgg ccacctgcga agccatcgcc gacaacaaag ccgtgtacct catggcagtc 1320
 ggcggcgcgg cgtatctcgt ggcaaaagcc atcaaatctt ccaaagtctt ggcgttcccc 1380
 gaattgggca tggaaagccat ttacgaattt gaagtcaaag acatgccggt aaccgtcgcc 1440
 gtagacagca aaggcgaatc catccacgcc accgccccgc ccaatggca ggcgaaaatc 1500
 ggcacatcc ccgtcaaate ttga 1524

<210> 222

<211> 507

<212> PRT

<213> Neisseria meningitidis

<400> 222

Met Thr Val Ile Lys Gln Glu Asp Phe Ile Gln Ser Ile Cys Asp Ala
 1 5 10 15

Phe Gln Phe Ile Ser Tyr Tyr His Pro Lys Asp Tyr Ile Asp Ala Leu
20 25 30
Tyr Lys Ala Trp Gln Lys Glu Glu Asn Pro Ala Ala Lys Asp Ala Met
35 40 45
Thr Gln Ile Leu Val Asn Ser Arg Met Cys Ala Glu Asn Asn Arg Pro
50 55 60
Ile Cys Gln Asp Thr Gly Ile Ala Thr Val Phe Leu Lys Val Gly Met
65 70 75 80
Asp Val Gln Trp Asp Ala Asp Met Ser Val Glu Glu Met Val Asn Glu
85 90 95
Gly Val Arg Arg Ala Tyr Thr Trp Glu Gly Asn Thr Leu Arg Ala Ser
100 105 110
Val Leu Ala Asp Pro Ala Gly Lys Arg Gln Asn Thr Lys Asp Asn Thr
115 120 125
Pro Ala Val Ile His Met Ser Ile Val Pro Gly Asp Lys Val Glu Val
130 135 140
Thr Cys Ala Ala Lys Gly Gly Gly Ser Glu Asn Lys Ser Lys Leu Ala
145 150 155 160
Met Leu Asn Pro Ser Asp Asn Ile Val Asp Trp Val Leu Lys Thr Ile
165 170 175
Pro Thr Met Gly Ala Gly Trp Cys Pro Pro Gly Ile Leu Gly Ile Gly
180 185 190
Ile Gly Gly Thr Pro Glu Lys Ala Val Leu Met Ala Lys Glu Ser Leu
195 200 205
Met Ser His Ile Asp Ile Gln Glu Leu Gln Glu Lys Ala Ala Ser Gly
210 215 220
Ala Glu Leu Ser Thr Thr Glu Ala Leu Arg Leu Glu Leu Phe Glu Lys
225 230 235 240
Val Asn Ala Leu Gly Ile Gly Ala Gln Gly Leu Gly Gly Leu Thr Thr
245 250 255
Val Leu Asp Val Lys Ile Leu Asp Tyr Pro Thr His Ala Ala Ser Lys
260 265 270
Pro Ile Ala Met Ile Pro Asn Cys Ala Ala Thr Arg His Val Glu Phe
275 280 285
Glu Leu Asp Gly Ser Gly Pro Val Glu Leu Thr Pro Pro Arg Val Glu
290 295 300
Asp Trp Pro Asp Leu Thr Tyr Ser Pro Asp Asn Gly Lys Arg Val Asp
305 310 315 320

Val Asp Lys Leu Thr Lys Glu Glu Val Ala Ser Trp Lys Thr Gly Asp
325 330 335

Val Leu Leu Leu Asn Gly Lys Ile Leu Thr Gly Arg Asp Ala Ala His
340 345 350

Lys Arg Leu Val Asp Met Leu Asp Lys Gly Glu Glu Leu Pro Val Asp
355 360 365

Phe Thr Asn Arg Leu Ile Tyr Tyr Val Gly Pro Val Asp Pro Val Gly
370 375 380

Asp Glu Ile Val Gly Pro Ala Gly Pro Thr Thr Ala Thr Arg Met Asp
385 390 395 400

Lys Phe Thr Arg Gln Met Leu Glu Gln Thr Asp Leu Leu Gly Met Ile
405 410 415

Gly Lys Ser Glu Arg Gly Ala Ala Thr Cys Glu Ala Ile Ala Asp Asn
420 425 430

Lys Ala Val Tyr Leu Met Ala Val Gly Gly Ala Ala Tyr Leu Val Ala
435 440 445

Lys Ala Ile Lys Ser Ser Lys Val Leu Ala Phe Pro Glu Leu Gly Met
450 455 460

Glu Ala Ile Tyr Glu Phe Glu Val Lys Asp Met Pro Val Thr Val Ala
465 470 475 480

Val Asp Ser Lys Gly Glu Ser Ile His Ala Thr Ala Pro Pro Gln Trp
485 490 495

Gln Ala Lys Ile Gly Ile Ile Pro Val Lys Ser
500 505

<210> 223
<211> 360
<212> DNA
<213> Neisseria gonorrhoeae

<400> 223
atggcttttg tggcggagga aacggaaata tccgcgccgt gtttcaaagg ctgcgagccg 60
acgggcgaca gcaggctgtt gtccaccacc aagagcgcg c gatgccgtg cgccaattcc 120
gccaaaggctt ccaagtcggc cacttcgccc aaggggttgg acggcgtttc caaaaacagc 180
agtttggtgt tggctttgac ggcggctttc cattcattta tatcagtcgg cgacacgcgg 240
ctcactccga tgccgaattt ggtaacgatg ttattgataa agccgacggt cgtgccgaac 300
aggctgcggc tggaaaccac atggtcgccc gcctgcagga aggtgaaaaa cgccgcctga 360

<210> 224
<211> 119
<212> PRT
<213> Neisseria gonorrhoeae

<400> 224

Met Ala Leu Val Ala Glu Glu Thr Glu Ile Ser Ala Pro Cys Phe Lys
1 5 10 15

Gly Cys Glu Pro Thr Gly Asp Ser Arg Leu Leu Ser Thr Thr Lys Ser
20 25 30

Ala Pro Met Pro Cys Ala Asn Ser Ala Lys Ala Ser Lys Ser Ala Thr
35 40 45

Ser Pro Lys Gly Leu Asp Gly Val Ser Lys Asn Ser Ser Leu Val Leu
50 55 60

Ala Leu Thr Ala Ala Phe His Ser Phe Ile Ser Val Gly Asp Thr Arg
65 70 75 80

Leu Thr Pro Met Pro Asn Leu Val Thr Met Leu Leu Ile Lys Pro Thr
85 90 95

Val Val Pro Asn Arg Leu Arg Leu Glu Thr Thr Trp Ser Pro Ala Cys
100 105 110

Arg Lys Val Lys Asn Ala Ala
115

<210> 225

<211> 360

<212> DNA

<213> Neisseria meningitidis

<400> 225

atggcttttg tggcggagga aacggaaata tccgcgccgt gtttcaaagg ctgcgagccg 60
acgggcgaca gcaggctggt gtccaccacc aagagcgcgc cgatgccgtg cgccaattcc 120
gccaaggctt ccaagtcggc cacttcgccc aaggggttgg acggcggttc caaaaacagc 180
agtttggtgt tggctttgac ggcggctttc cattcattha tatcagtcgg cgacacgcgg 240
ctcactccga tgccgaattt ggtaacgatg ttattgataa agccgacggt cgtgccgaac 300
aggctgcggc tggaaaccac atggtcgccc gcctgcagga aggtgaaaaa cgccgcctga 360

<210> 226

<211> 119

<212> PRT

<213> Neisseria meningitidis

<400> 226

Met Ala Leu Val Ala Glu Glu Thr Glu Ile Ser Ala Pro Cys Phe Lys
1 5 10 15

Gly Cys Glu Pro Thr Gly Asp Ser Arg Leu Leu Ser Thr Thr Lys Ser
20 25 30

Ala Pro Met Pro Cys Ala Asn Ser Ala Lys Ala Ser Lys Ser Ala Thr
35 40 45

Ser Pro Lys Gly Leu Asp Gly Val Ser Lys Asn Ser Ser Leu Val Leu
50 55 60

Ala Leu Thr Ala Ala Phe His Ser Phe Ile Ser Val Gly Asp Thr Arg
65 70 75 80

Leu Thr Pro Met Pro Asn Leu Val Thr Met Leu Leu Ile Lys Pro Thr
85 90 95

Val Val Pro Asn Arg Leu Arg Leu Glu Thr Thr Trp Ser Pro Ala Cys
100 105 110

Arg Lys Val Lys Asn Ala Ala
115

<210> 227

<211> 360

<212> DNA

<213> Neisseria meningitidis

<400> 227

atggcttttg tgcgaggagga aacggaaata tccgcgccgt gtttcaaagg ctgagagccg 60
acaggcgaca gcaggctgtt gtccaccacc aagagcgcg cgatgccgtg cgccaattcc 120
gccaaggctt ccaagtcggc cacttctccc aagggtattg acggcgtttc caaaaacagc 180
agtttggtgt tggctttgac ggcggctttc cattcgttta tatcagtcgg cgacacgtga 240
ctcacttcga tgccgaattt ggtaacgatg ttattgataa agccgacggt cgtgccgaac 300
aggctgcggc tggaaatcac atggtcgccc gcctgcaaaa aggtgaaaaa cgccgcctga 360

<210> 228

<211> 117

<212> PRT

<213> Neisseria meningitidis

<400> 228

Met Ala Leu Val Ala Glu Glu Thr Glu Ile Ser Ala Pro Cys Phe Lys
1 5 10 15

Gly Glu Pro Thr Gly Asp Ser Arg Leu Leu Ser Thr Thr Lys Ser Ala
20 25 30

Pro Met Pro Cys Ala Asn Ser Ala Lys Ala Ser Lys Ser Ala Thr Ser
35 40 45

Pro Lys Gly Leu Asp Gly Val Ser Lys Asn Ser Ser Leu Val Leu Ala
50 55 60

Leu Thr Ala Ala Phe His Ser Phe Ile Ser Val Gly Asp Thr Leu Thr
65 70 75 80

Ser Met Pro Asn Leu Val Thr Met Leu Leu Ile Lys Pro Thr Val Val
85 90 95

Pro Asn Arg Leu Arg Leu Glu Ile Thr Trp Ser Pro Ala Cys Lys Lys
100 105 110

Val Lys Asn Ala Ala
115

<210> 229
 <211> 387
 <212> DNA
 <213> *Neisseria gonorrhoeae*

<400> 229
 atgtgtatgc catacgcaat aagggtttca gacggcatct gccgcatttt tccgccgatg 60
 ccgtctgaaa cacgcaatca gcgcgcgagt gcctgtttca aatcgtcaat caaatcgcca 120
 acatattcca aaccgaccga caggcgcacc agtccggggc ggataccggc ggcgagtttt 180
 tcttcgggct gcatcctgcc gtgcgtggtt gtccacggat tggatgatgg cgagcgcacg 240
 tcgccgaggt tggcgggtacg ggaaaagagt tccacgactt tccacgcggc tgcttggtcg 300
 gcgacttcaa aaccgatgac gatgccgccg ccgttttgct gtttgcgat aagctccgcc 360
 tgcggatggt cgggcaatcc ggtgtag 387

<210> 230
 <211> 128
 <212> PRT
 <213> *Neisseria gonorrhoeae*

<400> 230
 Met Cys Met Pro Tyr Ala Ile Arg Val Ser Asp Gly Ile Cys Arg Ile
 1 5 10 15
 Phe Pro Pro Met Pro Ser Glu Thr Arg Asn Gln Arg Ala Ser Ala Cys
 20 25 30
 Phe Lys Ser Ser Ile Lys Ser Pro Thr Tyr Ser Lys Pro Thr Asp Arg
 35 40 45
 Arg Thr Ser Pro Gly Arg Ile Pro Ala Ala Ser Phe Ser Ser Gly Cys
 50 55 60
 Ile Leu Pro Cys Val Val Val His Gly Leu Val Met Val Glu Arg Thr
 65 70 75 80
 Ser Pro Arg Leu Ala Val Arg Glu Lys Ser Ser Thr Thr Phe His Ala
 85 90 95
 Ala Ala Trp Ser Ala Thr Ser Lys Pro Met Thr Met Pro Pro Pro Phe
 100 105 110
 Cys Cys Leu Arg Ile Ser Ser Ala Cys Gly Trp Ser Gly Asn Pro Val
 115 120 125

<210> 231
 <211> 387
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 231
 atgtgtatgc catataagat aagggtttca gacggcatct gctgtccaat gccgtctgaa 60

acacgcaatc agcgtgcgag tgcctgtttc aaatcgtaa tcaaatacgcc aacatattcc 120
aaaccgaccg acaggcgac caatccgggg cggatgttgg cggcgagttt ttcttcgggc 180
tgcacatcctgc cgtgctggtg tgtccacggg tgggtaaatgg tcgagcgac gtcaccgagg 240
ttggcgggtgc gggaaaagag ttccacgccg tccacaactt tccacgccgc ttcttgatcg 300
gcaacttcaa agccgatgac gatgccgccg ccgttttgct gtttgcgat aagcgccgcc 360
tgaggatggt cggacaatcc ggtgtag 387

<210> 232

<211> 128

<212> PRT

<213> Neisseria meningitidis

<400> 232

Met Cys Met Pro Tyr Lys Ile Arg Val Ser Asp Gly Ile Cys Cys Pro
1 5 10 15

Met Pro Ser Glu Thr Arg Asn Gln Arg Ala Ser Ala Cys Phe Lys Ser
20 25 30

Ser Ile Lys Ser Pro Thr Tyr Ser Lys Pro Thr Asp Arg Arg Thr Asn
35 40 45

Pro Gly Arg Met Leu Ala Ala Ser Phe Ser Ser Gly Cys Ile Leu Pro
50 55 60

Cys Val Val Val His Gly Trp Val Met Val Glu Arg Thr Ser Pro Arg
65 70 75 80

Leu Ala Val Arg Glu Lys Ser Ser Thr Pro Ser Thr Thr Phe His Ala
85 90 95

Ala Ser Xaa Ser Ala Thr Ser Lys Pro Met Thr Met Pro Pro Pro Phe
100 105 110

Cys Cys Leu Arg Ile Ser Ala Ala Xaa Gly Trp Ser Asp Asn Pro Val
115 120 125

<210> 233

<211> 395

<212> DNA

<213> Neisseria meningitidis

<400> 233

acgtgtatgt catataagat aagggtttca gacggcattt gcggtgtttt tccgccgatg 60
ccgtctgaac acgcaatcag cgcgcgagtg cctgtttcaa atcgtcaatc aaatcgccaa 120
catattccaa accgaccgac aggcgcacca atccggggcg gatgttggcg gcgagttttt 180
cttcgggctg catcctgccg tgcgtggttg tccacggatg ggtaatggc gagcgcacgt 240
cgccgaggtt ggcggtacgg gagaaaagtt cgacgccgtc cagcactttc cacgcggctg 300
cttggtcggc gacttcaaag ccgatgacga tgccgccgcc gttttgctgt ttgcggataa 360
gctccgcctg aggatggtcg ggtaatccgg tgtaa 395

<210> 234
<211> 130
<212> PRT
<213> *Neisseria meningitidis*

<400> 234
Thr Cys Met Ser Tyr Lys Ile Arg Val Ser Asp Gly Ile Cys Gly Val
1 5 10 15
Phe Pro Pro Met Pro Ser Glu Xaa Arg Asn Gln Arg Ala Ser Ala Cys
20 25 30
Phe Lys Ser Ser Ile Lys Ser Pro Thr Tyr Ser Lys Pro Thr Asp Arg
35 40 45
Arg Thr Asn Pro Gly Arg Met Leu Ala Ala Ser Phe Ser Ser Gly Cys
50 55 60
Ile Leu Pro Cys Val Val Val His Gly Trp Val Met Val Glu Arg Thr
65 70 75 80
Ser Pro Arg Leu Ala Val Arg Glu Lys Ser Ser Thr Pro Ser Thr Thr
85 90 95
Phe His Ala Ala Ala Trp Ser Ala Thr Ser Lys Pro Met Thr Met Pro
100 105 110
Pro Pro Phe Cys Cys Leu Arg Ile Ser Ser Ala Gly Trp Ser Gly Asn
115 120 125
Pro Val
130

<210> 235
<211> 414
<212> DNA
<213> *Neisseria gonorrhoeae*

<400> 235
atgccgcctt acttcatcac cctcttaacg atggaaaata caaaaagcgc ggcgaaaacg 60
cccactacaa tccaaccggc ttccataccg tccgcttttg cggcttccaa agcgtttttt 120
gccgtttcgg gcaacgctgc gtttgccgtg gccgccaag ccagcggggc ggctgttaca 180
acagccagtt ttgcgccgta tttacggcag gtgttaataa atttcattgat attttccttt 240
acgaaatttt taaaaaatg tgtttgcggg ctttgtgaag gttttagaga ccgcctgccg 300
ggcctcttaa acttaattctt ctttttcgta gaatccgaaa attacaaatt cccgcctat 360
ctcttccaat gccgagctaa aagcgtcttc atagctgtca tatttaccgg ctga 414

<210> 236
<211> 137
<212> PRT
<213> *Neisseria gonorrhoeae*

<400> 236
Met Pro Pro Tyr Phe Ile Thr Leu Leu Thr Met Glu Asn Thr Lys Ser

1	5	10	15
Ala Ala Lys Thr	Pro Thr Thr Ile	Gln Pro Ala Ser	Ile Pro Ser Ala
20	25	30	
Phe Ala Ala Ser	Lys Ala Phe Phe	Ala Val Ser Gly	Asn Ala Ala Phe
35	40	45	
Ala Cys Ala Ala	Lys Ala Ser Gly	Ala Ala Val Thr	Thr Ala Ser Phe
50	55	60	
Ala Pro Tyr Leu	Arg Gln Val Leu	Ile Asn Phe Met	Ile Phe Ser Phe
65	70	75	80
Thr Lys Phe Leu	Lys Lys Cys Val	Cys Gly Leu Cys	Glu Gly Phe Arg
85	90	95	
Asp Arg Leu Pro	Gly Leu Leu Asn	Leu Ile Phe Phe	Phe Val Glu Ser
100	105	110	
Glu Asn Tyr Lys	Phe Pro Ala Tyr	Leu Phe Gln Cys	Arg Ala Lys Ser
115	120	125	
Val Phe Ile Ala	Val Ile Phe Thr	Gly	
130	135		

<210> 237
 <211> 411
 <212> DNA
 <213> Neisseria meningitidis

<400> 237
 atgccgtctt acttcatcac tctcttaacg atggaaaata caaaaagcgc ggcgaaaatg 60
 cccactacaa tccaaccggc ttccataccg tccgcttttg cggcttccaa agcgtttttt 120
 gccgtatcgg gcaacgttgc atttgcatgt gcggccaaag ccaggggagc agctgttaca 180
 acagccagtt ttgcgcogta tttacggcag gtgttaataa atttcatgat attttccttc 240
 aaaaagtgtt tggcggtaat ggatggagcg tttttcagac gaccgccgaa catccgaaaa 300
 tcagtctttc aaaaatccga atacgacaaa ttcgtattgg ttgccgattt cttccaaacc 360
 tgcgttaatc gcttcttcga agtcgtagaa ataatcggca ttggtgatta a 411

<210> 238
 <211> 136
 <212> PRT
 <213> Neisseria meningitidis

<400> 238
 Met Pro Ser Tyr Phe Ile Thr Leu Leu Thr Met Glu Asn Thr Lys Ser
 1 5 10 15
 Ala Ala Lys Met Pro Thr Thr Ile Gln Pro Ala Ser Ile Pro Ser Ala
 20 25 30
 Phe Ala Ala Ser Lys Ala Phe Phe Ala Val Ser Gly Asn Val Ala Phe
 35 40 45

Ala Cys Ala Ala Lys Ala Arg Gly Ala Ala Val Thr Thr Ala Ser Phe
50 55 60

Ala Pro Tyr Leu Arg Gln Val Leu Ile Asn Phe Met Ile Phe Ser Phe
65 70 75 80

Lys Lys Cys Leu Ala Val Met Asp Gly Ala Phe Phe Arg Arg Pro Pro
85 90 95

Asn Ile Arg Lys Ser Val Phe Gln Lys Ser Glu Tyr Asp Lys Phe Val
100 105 110

Leu Val Ala Asp Phe Phe Gln Thr Cys Val Asn Arg Phe Phe Glu Val
115 120 125

Val Glu Ile Ile Gly Ile Gly Asp
130 135

<210> 239

<211> 411

<212> DNA

<213> Neisseria meningitidis

<400> 239

atgccgtctt acttcatcac tctcttaacg atggaaaaga caaaaagcgc ggcgaaaacg 60
cccactacaa tccaaccggc ttccataccg tccgcttttg cggcttccaa agcgtttttt 120
gctgtatcgg gcaacgttgc atttgcattg gcggccaaag ccaggggagc agctgttaca 180
acagccagtt ttgcgcgcta ttacggcag gtgtaataa atttcatgat attttccttc 240
aaaaagtgtt tggcggtaat ggatggagcg tttttcagac gaccgccgaa catccgaaaa 300
tcagtctttc aaaaatccga atacgacaaa ttcgtattgg ttgccgattt cttccaaacc 360
tgcgttaatc gcttcttcga agtcgtagaa ataatcggca ttggtgatta a 411

<210> 240

<211> 136

<212> PRT

<213> Neisseria meningitidis

<400> 240

Met Pro Ser Tyr Phe Ile Thr Leu Leu Thr Met Glu Lys Thr Lys Ser
1 5 10 15

Ala Ala Lys Thr Pro Thr Thr Ile Gln Pro Ala Ser Ile Pro Ser Ala
20 25 30

Phe Ala Ala Ser Lys Ala Phe Phe Ala Val Ser Gly Asn Val Ala Phe
35 40 45

Ala Cys Ala Ala Lys Ala Arg Gly Ala Ala Val Thr Thr Ala Ser Phe
50 55 60

Ala Pro Tyr Leu Arg Gln Val Leu Ile Asn Phe Met Ile Phe Ser Phe
65 70 75 80

Lys Lys Cys Leu Ala Val Met Asp Gly Ala Phe Phe Arg Arg Pro Pro
85 90 95

Asn Ile Arg Lys Ser Val Phe Gln Lys Ser Glu Tyr Asp Lys Phe Val
 100 105 110

Leu Val Ala Asp Phe Phe Gln Thr Cys Val Asn Arg Phe Phe Glu Val
 115 120 125

Val Glu Ile Ile Gly Ile Gly Asp
 130 135

<210> 241

<211> 828

<212> DNA

<213> Neisseria gonorrhoeae

<400> 241

atgtgggata atgccgaagc gatggaacgg ctgacgcgct ggctgcttgt catgatggcg 60
 atgctgcttg ctgctgccgg gctgggtttgg ttttacaatt cgaatcatct gcccgtaag 120
 caggtgtcgc tgaagggcaa cctgggttat tccgataaga aggcattggg cagtttggcg 180
 aaagaataca tccatgggaa tattttgagg acggacatca atggcgacaca ggaagcctac 240
 cgccgggtatc cgtggattgc gtcggtcattg gtgcgcgcgc gttttccga tacggttgag 300
 gtcgtcctga ccgagcgcaa gccgggttgca cgttggggcg accatgcctt ggtggacggc 360
 gaaggcaatg tttttgaagc ccgcttggaac agacccgaa tgccggtatt cagaggcgcg 420
 gaaggaacgt ctgccgaaat gctccgccgt tatgacgaat tttcgactgt tttggcaaaa 480
 caggggtttg gcatcaaaga gatgacctat acggcacggt cggcggtggaa tgcgttttg 540
 gacaacggca tcaccgtcag gctcggacgg gaaaacgaga tgaaacgcct ccggcctttt 600
 accgaagcgt ggcagcatct gttgcgtaag aataaaaaatc ggttatccta tgtggatatg 660
 aggtataagg acggattttc agtcccccat gctcccgacg gtttaccga aaaagaatcc 720
 gaagaatatt gggaacaggt ttgggacata ttacggcctg gcgtcggaac cggttcgacg 780
 caaatttcaa tcagttataa gggcagacga acaatggaac agcagtaa 828

<210> 242

<211> 275

<212> PRT

<213> Neisseria gonorrhoeae

<400> 242

Met Trp Asp Asn Ala Glu Ala Met Glu Arg Leu Thr Arg Trp Leu Leu
 1 5 10 15

Val Met Met Ala Met Leu Leu Ala Ala Ser Gly Leu Val Trp Phe Tyr
 20 25 30

Asn Ser Asn His Leu Pro Val Lys Gln Val Ser Leu Lys Gly Asn Leu
 35 40 45

Val Tyr Ser Asp Lys Lys Ala Leu Gly Ser Leu Ala Lys Glu Tyr Ile
 50 55 60

His Gly Asn Ile Leu Arg Thr Asp Ile Asn Gly Ala Gln Glu Ala Tyr
 65 70 75 80

Arg Arg Tyr Pro Trp Ile Ala Ser Val Met Val Arg Arg Arg Phe Pro
 85 90 95

Asp Thr Val Glu Val Val Leu Thr Glu Arg Lys Pro Val Ala Arg Trp
100 105 110

Gly Asp His Ala Leu Val Asp Gly Glu Gly Asn Val Phe Glu Ala Arg
115 120 125

Leu Asp Arg Pro Gly Met Pro Val Phe Arg Gly Ala Glu Gly Thr Ser
130 135 140

Ala Glu Met Leu Arg Arg Tyr Asp Glu Phe Ser Thr Val Leu Ala Lys
145 150 155 160

Gln Gly Leu Gly Ile Lys Glu Met Thr Tyr Thr Ala Arg Ser Ala Trp
165 170 175

Asn Val Val Leu Asp Asn Gly Ile Thr Val Arg Leu Gly Arg Glu Asn
180 185 190

Glu Met Lys Arg Leu Arg Leu Phe Thr Glu Ala Trp Gln His Leu Leu
195 200 205

Arg Lys Asn Lys Asn Arg Leu Ser Tyr Val Asp Met Arg Tyr Lys Asp
210 215 220

Gly Phe Ser Val Pro His Ala Pro Asp Gly Leu Pro Glu Lys Glu Ser
225 230 235 240

Glu Glu Tyr Trp Glu Gln Val Trp Asp Ile Leu Arg Pro Gly Val Gly
245 250 255

Asn Gly Ser Thr Gln Ile Ser Ile Ser Tyr Lys Gly Arg Arg Thr Met
260 265 270

Glu Gln Gln
275

<210> 243

<211> 729

<212> DNA

<213> *Neisseria meningitidis*

<400> 243

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caggtgtcgc tgaagggcaa cctggtttat tccgataaga agacattggg cagtttggcg 180
aaagaataca tccatgggaa tattttgagg acggacatca atggcgcaca ggaggcctac 240
cgccgggtatc cgtggattgc gtcggtcgat gtgcgcgccg gttttcccga cacggttgag 300
gtcgtcctga ccgagcgcaa gccggtcgcg cgttgggggc accatgcctt ggtggacggc 360
gaaggcaatg tttttgaagc ccgcttggac agacccggaa tgccggtatt cagaggcgcg 420
gaaggaacgt ctgccgaaat gctccgccgt tatgacgaat tttcgactgt tttggcaaaa 480
cagggtttgg gcatcaaaga gatgacctat acggcacggt cggcgtggat tgcgttttg 540
gacaacggca tcaccgtcag gctcggacgg gaaaacgaga tgaaacgcct ccggcttttt 600
accgaagcgt ggcagcatct gttgcgtaaa aataaaaatc gggtatccta tgtggatatg 660
aggtataagg acggattttc agtccgctat gcttcgcagc gtttaccgca aaaagaatcc 720
gaagaatag                                     729
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<210> 244
<211> 242
<212> PRT
<213> Neisseria meningitidis

<400> 244

Met Trp Asp Asn Ala Glu Ala Met Glu Arg Leu Thr Arg Trp Leu Leu
1 5 10 15
Val Met Met Ala Met Leu Leu Ala Ala Ser Gly Leu Val Trp Phe Tyr
20 25 30
Asn Ser Asn His Leu Pro Val Lys Gln Val Ser Leu Lys Gly Asn Leu
35 40 45
Val Tyr Ser Asp Lys Lys Thr Leu Gly Ser Leu Ala Lys Glu Tyr Ile
50 55 60
His Gly Asn Ile Leu Arg Thr Asp Ile Asn Gly Ala Gln Glu Ala Tyr
65 70 75 80
Arg Arg Tyr Pro Trp Ile Ala Ser Val Met Val Arg Arg Arg Phe Pro
85 90 95
Asp Thr Val Glu Val Val Leu Thr Glu Arg Lys Pro Val Ala Arg Trp
100 105 110
Gly Asp His Ala Leu Val Asp Gly Glu Gly Asn Val Phe Glu Ala Arg
115 120 125
Leu Asp Arg Pro Gly Met Pro Val Phe Arg Gly Ala Glu Gly Thr Ser
130 135 140
Ala Glu Met Leu Arg Arg Tyr Asp Glu Phe Ser Thr Val Leu Ala Lys
145 150 155 160
Gln Gly Leu Gly Ile Lys Glu Met Thr Tyr Thr Ala Arg Ser Ala Trp
165 170 175
Ile Val Val Leu Asp Asn Gly Ile Thr Val Arg Leu Gly Arg Glu Asn
180 185 190
Glu Met Lys Arg Leu Arg Leu Phe Thr Glu Ala Trp Gln His Leu Leu
195 200 205
Arg Lys Asn Lys Asn Arg Leu Ser Tyr Val Asp Met Arg Tyr Lys Asp
210 215 220
Gly Phe Ser Val Arg Tyr Ala Ser Asp Gly Leu Pro Glu Lys Glu Ser
225 230 235 240
Glu Glu

<210> 245

<211> 729
 <212> DNA
 <213> Neisseria meningitidis

<400> 245
 atgtgggata atgccgaagc gatggaacgg ctgacgcgct ggctgcttgt catgatggcg 60
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 cagggtgtcg tgaagggcaa cctagtttat tccgataaga aagcattggg cagtttggcg 180
 aaagaataca tccatgggaa tattttgagg acggacatca atggcgcaca ggaggcctac 240
 cgccggtatc cgtggattgc gtcggtcacg gtgcgccgcc gttttccga cacggttgag 300
 gtcgtcctga ccgagcgcaa gccggtcgag cgttggggcg accatgcctt ggtggacggc 360
 gaaggcaatg tttttgaagc ccgtttggac agaccggaa tgccggtatt cagaggcgcg 420
 gaaggaaacgt ctgccgaaat gctccgccgt tatgacgaat tttcgactgt tttggcaaaa 480
 cagggtttgg gcatcaaaga gatgacctat acggcacggt cggcggtggat tgtcgttttg 540
 gacaacggca tcaccgtcag gtcggacgg gaaaacgaga tgaaacgcct ccggcttttt 600
 accgaagcgt ggcaacatct gttgcgtaaa aataaaaatc ggttatccta tgtggatatg 660
 aggtataagg acggattttc agtccgctat gctcccgcag gtttaccga aaaagaatcc 720
 gaagaatag 729

<210> 246
 <211> 242
 <212> PRT
 <213> Neisseria meningitidis

<400> 246
 Met Trp Asp Asn Ala Glu Ala Met Glu Arg Leu Thr Arg Trp Leu Leu
 1 5 10 15
 Val Met Met Ala Met Leu Leu Ala Ala Ser Gly Leu Val Trp Phe Tyr
 20 25 30
 Asn Ser Asn His Leu Pro Val Lys Gln Val Ser Leu Lys Gly Asn Leu
 35 40 45
 Val Tyr Ser Asp Lys Lys Ala Leu Gly Ser Leu Ala Lys Glu Tyr Ile
 50 55 60
 His Gly Asn Ile Leu Arg Thr Asp Ile Asn Gly Ala Gln Glu Ala Tyr
 65 70 75 80
 Arg Arg Tyr Pro Trp Ile Ala Ser Val Met Val Arg Arg Arg Phe Pro
 85 90 95
 Asp Thr Val Glu Val Val Leu Thr Glu Arg Lys Pro Val Ala Arg Trp
 100 105 110
 Gly Asp His Ala Leu Val Asp Gly Glu Gly Asn Val Phe Glu Ala Arg
 115 120 125
 Leu Asp Arg Pro Gly Met Pro Val Phe Arg Gly Ala Glu Gly Thr Ser
 130 135 140
 Ala Glu Met Leu Arg Arg Tyr Asp Glu Phe Ser Thr Val Leu Ala Lys
 145 150 155 160
 Gln Gly Leu Gly Ile Lys Glu Met Thr Tyr Thr Ala Arg Ser Ala Trp

	165		170		175
Ile Val Val	Leu Asp Asn Gly Ile Thr Val Arg Leu Gly Arg Glu Asn				
	180		185		190
Glu Met Lys Arg Leu Arg Leu Phe Thr Glu Ala Trp Gln His Leu Leu					
	195		200		205
Arg Lys Asn Lys Asn Arg Leu Ser Tyr Val Asp Met Arg Tyr Lys Asp					
	210		215		220
Gly Phe Ser Val Arg Tyr Ala Pro Asp Gly Leu Pro Glu Lys Glu Ser					
	225		230		235
					240
Glu Glu					

<210> 247
 <211> 1359
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 247

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aacaaacccg	tgtcgcgcat	cgtaaccgac	agccgcgata	ttcggaagg	cgatgtgttt	120
ttcgcattgg	cgggcgggcg	gtttgacgcg	catgattttg	ttggaggcgt	attgtctgcg	180
ggcgcggcgg	cggttggtgt	ttcgcgcgaa	gattgcgcgg	ctttgggcg	cgcggtgaaa	240
gtcgaatgaca	cgcttgccgc	gttgcaaacg	ttggcgaagg	cggtggcgga	taatgtgaac	300
ccgtttgtgt	tccgcattac	cggttcgggc	ggcaagacga	cggtgaagga	gatgctggct	360
gcggtattgc	gccgcggttt	cggcgatgat	gccgtttcgg	cgacggcagg	caacttcaac	420
aaccacatcg	gattgccgct	gactttattg	aaattaaacg	aaaaacaccg	ctatgccgtg	480
attgaaatgg	gcatgaacca	ttttggcgaa	ctggcggttt	taacgcaaat	cgccaaaccc	540
gatgccgctt	tgttcaacaa	cgccttgcgc	gcccattgtc	gatgcggttt	cgacggagtg	600
ggcgatattg	ccaaagcgaa	aagcgagatt	tatgcaggct	tatgttcaga	cggcattggca	660
ctgattcctc	aagaagatgc	caatatggct	gtcttcaaaa	cggcaacgtt	taatttgaat	720
acgtgcactt	tccgcgtcga	tagcggcgat	gtccgcgcgg	aaaatatcgt	gctgaaacct	780
ttgtcgtgcg	aatttgattt	ggtgtgcggc	gacgagcgca	ctgccgtggt	gctgcctgtt	840
cccggccgcc	acaatgtcca	caacgccgcc	gctgccgcgg	cgctggcttt	ggctgccggg	900
ttgagtttga	acgatgtggc	ggaaggtttg	caaggcttca	gcaacatcaa	aggccgtctg	960
aacgtcaaag	ccggcatcaa	gggcgcaacc	ctgattgaag	atacttataa	tgcgaatccc	1020
gacagtatga	aagccgcggt	tgacgtgttg	gcgcgtatgc	ctgcgcgcgc	cattttcgtg	1080
atgggcgata	tgggcgaact	gggcgaggac	gaagccgcgc	ccatgcacgc	cgaagtcggc	1140
gcgtacgccc	gcgaccaagg	catcgaagcg	gcttattttg	tccggcgaaa	cagcgtcgaa	1200
gcggcggaag	aatttggcgc	ggacgggttt	tggttcgcgc	ccaaagaccc	gttgattcaa	1260
gtgttgagcc	acgatttgcc	cgaacgcgcc	accgtgttgg	tgaaagggtt	gcgctttatg	1320
cagatggaag	aagtggtcga	ggcattggag	gataagtgga			1359

<210> 248
 <211> 452
 <212> PRT
 <213> Neisseria gonorrhoeae

<400> 248

Met	Lys	Pro	Leu	Asp	Leu	Asn	Phe	Ile	Cys	Gln	Ala	Leu	Lys	Leu	Pro
1					5				10					15	

Met Pro Ser Glu Asn Lys Pro Val Ser Arg Ile Val Thr Asp Ser Arg
 20 25 30
 Asp Ile Arg Glu Gly Asp Val Phe Phe Ala Leu Ala Gly Gly Arg Phe
 35 40 45
 Asp Ala His Asp Phe Val Gly Gly Val Leu Ser Ala Gly Ala Ala Ala
 50 55 60
 Val Val Val Ser Arg Glu Asp Cys Ala Ala Leu Gly Gly Ala Leu Lys
 65 70 75 80
 Val Asp Asp Thr Leu Ala Ala Leu Gln Thr Leu Ala Lys Ala Trp Arg
 85 90 95
 Asp Asn Val Asn Pro Phe Val Phe Gly Ile Thr Gly Ser Gly Gly Lys
 100 105 110
 Thr Thr Val Lys Glu Met Leu Ala Ala Val Leu Arg Arg Arg Phe Gly
 115 120 125
 Asp Asp Ala Val Ser Ala Thr Ala Gly Asn Phe Asn Asn His Ile Gly
 130 135 140
 Leu Pro Leu Thr Leu Leu Lys Leu Asn Glu Lys His Arg Tyr Ala Val
 145 150 155 160
 Ile Glu Met Gly Met Asn His Phe Gly Glu Leu Ala Val Leu Thr Gln
 165 170 175
 Ile Ala Lys Pro Asp Ala Ala Leu Val Asn Asn Ala Leu Arg Ala His
 180 185 190
 Val Gly Cys Gly Phe Asp Gly Val Gly Asp Ile Ala Lys Ala Lys Ser
 195 200 205
 Glu Ile Tyr Ala Gly Leu Cys Ser Asp Gly Met Ala Leu Ile Pro Gln
 210 215 220
 Glu Asp Ala Asn Met Ala Val Phe Lys Thr Ala Thr Phe Asn Leu Asn
 225 230 235 240
 Thr Cys Thr Phe Gly Val Asp Ser Gly Asp Val Arg Ala Glu Asn Ile
 245 250 255
 Val Leu Lys Pro Leu Ser Cys Glu Phe Asp Leu Val Cys Gly Asp Glu
 260 265 270
 Arg Thr Ala Val Val Leu Pro Val Pro Gly Arg His Asn Val His Asn
 275 280 285
 Ala Ala Ala Ala Ala Ala Leu Ala Leu Ala Ala Gly Leu Ser Leu Asn
 290 295 300
 Asp Val Ala Glu Gly Leu Gln Gly Phe Ser Asn Ile Lys Gly Arg Leu
 305 310 315 320

Asn Val Lys Ala Gly Ile Lys Gly Ala Thr Leu Ile Asp Asp Thr Tyr
325 330 335

Asn Ala Asn Pro Asp Ser Met Lys Ala Ala Val Asp Val Leu Ala Arg
340 345 350

Met Pro Ala Pro Arg Ile Phe Val Met Gly Asp Met Gly Glu Leu Gly
355 360 365

Glu Asp Glu Ala Ala Ala Met His Ala Glu Val Gly Ala Tyr Ala Arg
370 375 380

Asp Gln Gly Ile Glu Ala Ala Tyr Phe Val Gly Asp Asn Ser Val Glu
385 390 395 400

Ala Ala Glu Lys Phe Gly Ala Asp Gly Leu Trp Phe Ala Ala Lys Asp
405 410 415

Pro Leu Ile Gln Val Leu Ser His Asp Leu Pro Glu Arg Ala Thr Val
420 425 430

Leu Val Lys Gly Ser Arg Phe Met Gln Met Glu Glu Val Val Glu Ala
435 440 445

Leu Glu Asp Lys
450

<210> 249

<211> 1368

<212> DNA

<213> Neisseria meningitidis

<400> 249

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ttcgatttgg cgggcgagcg gtttgacgcg catgattttg ttgaagacgt attggctgct 180
ggtgcgcgcg cggttgttgt ttgcgcgcga gattgtgctg caatggatgg cgcgttgaaa 240
gtcgatgaca cgcttgccgc attgcaaacg ctggcaaagg cgtggcgtga aaatgtgaat 300
ccgttttgtt tccgcattac cggttcgggc ggcaagacga cggatgaagg aatgctggct 360
gcggtattgc gccgcgcttt cggcgatgat gccgtgttgg cgacggcagg caacttcaac 420
aaccatatcg gattgccgct gactttgttg aagttaaaccg aaaaacaccg ctatgccgtg 480
attgaaatgg gcatgaacca ttccggcgaa ctggcggttt taacgcamat cgccaaacca 540
aatgccgcgc tggatcaaca cgcgatgcgc gccatgtcg gctgcggttt cgacggagtg 600
ggcgatattg ccaaagcgaa aagcgagatt taccaagggt tatgttcaga cggcattgca 660
ctgattcctc aagaagatgc caatatggct gtcttcaaaa cggcaacgct taatttgaat 720
acgcgcactt tcggcatcga tagcggcgat gttcacgcgc aaaatattgt gctgaaaccg 780
ttgtcgtgcg aatttgattt ggtgtgcggc gatgagcgcg ccgccgtggt gctgcctgtt 840
ccggccgcgc acaatgtcca caacgccgcc gctgcgcgcg cgctggcttt ggctgcgggt 900
ttgagtttga acgatgtggc ggaaggtttg aaaggcttca gcaatatcaa aggcgctctg 960
aacgtcaaat ccggaatcaa gggcgcaacc ctgattgacg atacttataa tgccaaccct 1020
gacagcatga aagctgcgat tgacgtgttg gcgcgatgc ctgcgcgcgc tattttcgtg 1080
atgggcgata tgggcgaact gggcgaaact ggcgaggacg aagccgcgcg tatgcacgcc 1140
gaagtcggcg cgtatgcccg cgaccaaggc atcgaagcgc cttattttgt cggcgacaac 1200

agcgtcgaag cggcggaaaa atttggcgcg gacggtttgt ggttcgccgc caaagaccgc 1260

ttgattcaag tggtgcgcca cgatttgccc gaacgcgcca ccgtgttggt gaaaggttcg 1320
 cgctttatgc agatggaaga agtggtcgag gcattggagg ataagtga 1368

<210> 250
 <211> 455
 <212> PRT
 <213> Neisseria meningitidis

<400> 250
 Met Lys Pro Leu Asp Leu Asn Phe Ile Cys Gln Ala Leu Lys Leu Pro
 1 5 10 15
 Met Pro Ser Glu Ser Lys Pro Val Ser Arg Ile Val Thr Asp Ser Arg
 20 25 30
 Asp Ile Arg Ala Gly Asp Val Phe Phe Ala Leu Ala Gly Glu Arg Phe
 35 40 45
 Asp Ala His Asp Phe Val Glu Asp Val Leu Ala Ala Gly Ala Ala Ala
 50 55 60
 Val Val Val Ser Arg Glu Asp Cys Ala Ala Met Asp Gly Ala Leu Lys
 65 70 75 80
 Val Asp Asp Thr Leu Ala Ala Leu Gln Thr Leu Ala Lys Ala Trp Arg
 85 90 95
 Glu Asn Val Asn Pro Phe Val Phe Gly Ile Thr Gly Ser Gly Gly Lys
 100 105 110
 Thr Thr Val Lys Glu Met Leu Ala Ala Val Leu Arg Arg Arg Phe Gly
 115 120 125
 Asp Asp Ala Val Leu Ala Thr Ala Gly Asn Phe Asn Asn His Ile Gly
 130 135 140
 Leu Pro Leu Thr Leu Leu Lys Leu Asn Glu Lys His Arg Tyr Ala Val
 145 150 155 160
 Ile Glu Met Gly Met Asn His Phe Gly Glu Leu Ala Val Leu Thr Xaa
 165 170 175
 Ile Ala Lys Pro Asn Ala Ala Leu Val Asn Asn Ala Met Arg Ala His
 180 185 190
 Val Gly Cys Gly Phe Asp Gly Val Gly Asp Ile Ala Lys Ala Lys Ser
 195 200 205
 Glu Ile Tyr Gln Gly Leu Cys Ser Asp Gly Ile Ala Leu Ile Pro Gln
 210 215 220
 Glu Asp Ala Asn Met Ala Val Phe Lys Thr Ala Thr Leu Asn Leu Asn
 225 230 235 240
 Thr Arg Thr Phe Gly Ile Asp Ser Gly Asp Val His Ala Glu Asn Ile
 245 250 255

Val Leu Lys Pro Leu Ser Cys Glu Phe Asp Leu Val Cys Gly Asp Glu
 260 265 270
 Arg Ala Ala Val Val Leu Pro Val Pro Gly Arg His Asn Val His Asn
 275 280 285
 Ala Ala Ala Ala Ala Ala Leu Ala Leu Ala Ala Gly Leu Ser Leu Asn
 290 295 300
 Asp Val Ala Glu Gly Leu Lys Gly Phe Ser Asn Ile Lys Gly Arg Leu
 305 310 315 320
 Asn Val Lys Ser Gly Ile Lys Gly Ala Thr Leu Ile Asp Asp Thr Tyr
 325 330 335
 Asn Ala Asn Pro Asp Ser Met Lys Ala Ala Ile Asp Val Leu Ala Arg
 340 345 350
 Met Pro Ala Pro Arg Ile Phe Val Met Gly Asp Met Gly Glu Leu Gly
 355 360 365
 Glu Leu Gly Glu Asp Glu Ala Ala Ala Met His Ala Glu Val Gly Ala
 370 375 380
 Tyr Ala Arg Asp Gln Gly Ile Glu Ala Ala Tyr Phe Val Gly Asp Asn
 385 390 395 400
 Ser Val Glu Ala Ala Glu Lys Phe Gly Ala Asp Gly Leu Trp Phe Ala
 405 410 415
 Ala Lys Asp Pro Leu Ile Gln Val Leu Arg His Asp Leu Pro Glu Arg
 420 425 430
 Ala Thr Val Leu Val Lys Gly Ser Arg Phe Met Gln Met Glu Glu Val
 435 440 445
 Val Glu Ala Leu Glu Asp Lys
 450 455

<210> 251

<211> 1359

<212> DNA

<213> Neisseria meningitidis

<400> 251

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 ttcgatttgg cgggcgggcg gtttgatgcg catgattttg ttgaagacgt attggctgcg 180
 ggtgcggcgg cggttgttgt ttcgcgcgaa gattgcgttg caatggatgg cgcgttgaaa 240
 gtcgatgaca cgcttaccgc gttgcaaatt ttggcgaagg cgtggcgcga gaatgtgaac 300
 ccgtttgtgt tcggtattac cggctcgggc ggcaagacga cggatgaagg aatgttggct 360
 gcggtattgc gccgccgttt cggcgataat gccgttttgg cgacggcagg caacttcaac 420
 aaccacatcg gattgccgtt gactttgttg aaattaaacg aaaaacaccg ctatgccgtg 480
 attgaaatgg gtatgaacca ttttgcgcaa ctggcggttt tgacacaaat cgccaaaccc 540
 gatgccgat tggatcaaaa cgccatgcgc gcccatgtcg gctgcggttt cgacggagtg 600

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ggcgatattg ccaaagcgaa aagcgagatt tatcaaggct tatgttcaga cggcatggcg 660
ctgattcctc aagaagatgc caatatggct gtcttcaaaa cggcaacgct taatttgaat 720
acgcgcactt tcggcatcga tagcggcgat gtccacgcgg aaaatatcgt gctgaaaccg 780
ttgtcgtgcg aatttgattt ggtgtgcggc aacgagtgcg cagccgtggt tctgcccgtt 840
cccgccgcc acaatgtcca caacgccgcc gccgccgcc cgctgtcttt ggctgcaggt 900
ttgagtttga acgatgtggc ggaaggtttg aaaggcttca gcaatatcaa aggccgtctg 960
aacgtcaaat ccggaatcaa gggcgcaacc ctgattgacg atacttataa tgcgaaccct 1020
gacagcatga aagctgcggt tgacgtggtg gcgcgtatgc ctgcgccgcg tattttcgtg 1080
atgggcgata tgggcgaact gggtgaggac gaagccgccg ccatgcacgc cgaagtcggc 1140
gcgtacgccc gcgaccaagg catcgaagcg gcttattttg tcggcgacaa cagcgtcgaa 1200
gcggcggaaa aatttggcgc ggacggtttg tggttcgccg ccaaagacct gttgattcaa 1260
gtgttgccgc acgatttgcc cgaacgcgcc accgtgttgg tgaaagggtc gcgctttatg 1320
cagatggaag aagtggtcga ggcattggag gataagtga 1359

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<210> 252

<211> 452

<212> PRT

<213> Neisseria meningitidis

<400> 252

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Met Lys Pro Leu Asp Leu Asn Phe Ile Cys Gln Ala Leu Lys Leu Pro
  1             5             10             15

Met Pro Ser Glu Ser Lys Pro Val Ser Arg Ile Val Thr Asp Ser Arg
          20             25             30

Asp Ile Arg Ala Gly Asp Val Phe Phe Ala Leu Ala Gly Gly Arg Phe
          35             40             45

Asp Ala His Asp Phe Val Glu Asp Val Leu Ala Ala Gly Ala Ala Ala
          50             55             60

Val Val Val Ser Arg Glu Asp Cys Val Ala Met Asp Gly Ala Leu Lys
          65             70             75             80

Val Asp Asp Thr Leu Thr Ala Leu Gln Met Leu Ala Lys Ala Trp Arg
          85             90             95

Glu Asn Val Asn Pro Phe Val Phe Gly Ile Thr Gly Ser Gly Gly Lys
          100            105            110

Thr Thr Val Lys Glu Met Leu Ala Ala Val Leu Arg Arg Arg Phe Gly
          115            120            125

Asp Asn Ala Val Leu Ala Thr Ala Gly Asn Phe Asn Asn His Ile Gly
          130            135            140

Leu Pro Leu Thr Leu Leu Lys Leu Asn Glu Lys His Arg Tyr Ala Val
          145            150            155            160

Ile Glu Met Gly Met Asn His Phe Gly Glu Leu Ala Val Leu Thr Gln
          165            170            175

Ile Ala Lys Pro Asp Ala Ala Leu Val Asn Asn Ala Met Arg Ala His
          180            185            190

```


Val Gly Cys Gly Phe Asp Gly Val Gly Asp Ile Ala Lys Ala Lys Ser
 195 200 205
 Glu Ile Tyr Gln Gly Leu Cys Ser Asp Gly Met Ala Leu Ile Pro Gln
 210 215 220
 Glu Asp Ala Asn Met Ala Val Phe Lys Thr Ala Thr Leu Asn Leu Asn
 225 230 235 240
 Thr Arg Thr Phe Gly Ile Asp Ser Gly Asp Val His Ala Glu Asn Ile
 245 250 255
 Val Leu Lys Pro Leu Ser Cys Glu Phe Asp Leu Val Cys Gly Asn Glu
 260 265 270
 Cys Ala Ala Val Val Leu Pro Val Pro Gly Arg His Asn Val His Asn
 275 280 285
 Ala Ala Ala Ala Ala Ala Leu Ser Leu Ala Ala Gly Leu Ser Leu Asn
 290 295 300
 Asp Val Ala Glu Gly Leu Lys Gly Phe Ser Asn Ile Lys Gly Arg Leu
 305 310 315 320
 Asn Val Lys Ser Gly Ile Lys Gly Ala Thr Leu Ile Asp Asp Thr Tyr
 325 330 335
 Asn Ala Asn Pro Asp Ser Met Lys Ala Ala Val Asp Val Leu Ala Arg
 340 345 350
 Met Pro Ala Pro Arg Ile Phe Val Met Gly Asp Met Gly Glu Leu Gly
 355 360 365
 Glu Asp Glu Ala Ala Ala Met His Ala Glu Val Gly Ala Tyr Ala Arg
 370 375 380
 Asp Gln Gly Ile Glu Ala Ala Tyr Phe Val Gly Asp Asn Ser Val Glu
 385 390 395 400
 Ala Ala Glu Lys Phe Gly Ala Asp Gly Leu Trp Phe Ala Ala Lys Asp
 405 410 415
 Pro Leu Ile Gln Val Leu Arg His Asp Leu Pro Glu Arg Ala Thr Val
 420 425 430
 Leu Val Lys Gly Ser Arg Phe Met Gln Met Glu Glu Val Val Glu Ala
 435 440 445
 Leu Glu Asp Lys
 450

<210> 253
 <211> 744
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 253

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acaaacgggt tcacattatc gcgccacgcc ttcgccaacg ttgcaacgc ggcaagcgtg 180
tcatcgactt tcaacgcgcc gcccaaagcc gcgcaatctt cgcgcgaaac cacaaccgcc 240
gccgcgcccc cagacaatac gcctccaaca aaatcatgcg cgtaaacccg cccgcccgcc 300
aatgcgaaaa acacatcgcc ttcccgaata tcgcggctgt cggttacgat gcgcgacacg 360
ggtttgtttt cagacggcat cggaagcttg agggcttggc agatgaaatt taggtccagt 420
ggtttcatat ttgctttcgt taatattcgg gcggcggaca catcggtagc ggctgatttt 480
tttatcgctt gttttgctgt ggtaaaacac agattatttt cccattctca ttcggcattt 540
tttctgtacg tatcattttt tagacgtatt tttagccgat ttgccttttc ccgcatacca 600
cggcgcgggg tcgtcggact gtctgtcgat aaaggcaagg ttattgcctt cgcccgccac 660
atcggggaca ttcccccaaa aatcatagcc gtcacgggc aactcgtcgg tttcgatacc 720
cgtccaactg ccgaatccgc gtaa 744
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<210> 254

<211> 247

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 254

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Met Trp Leu Leu Lys Leu Pro Ala Val Ala Glu Thr Ala Ser Ser Pro
  1             5             10             15

Lys Arg Arg Arg Asn Thr Ala Ala Ser Ile Ser Phe Thr Val Val Leu
      20             25             30

Pro Pro Glu Pro Val Met Pro Asn Thr Asn Gly Phe Thr Leu Ser Arg
      35             40             45

His Ala Phe Ala Asn Val Cys Asn Ala Ala Ser Val Ser Ser Thr Phe
      50             55             60

Asn Ala Pro Pro Lys Ala Ala Gln Ser Ser Arg Glu Thr Thr Thr Ala
      65             70             75             80

Ala Ala Pro Ala Asp Asn Thr Pro Pro Thr Lys Ser Cys Ala Ser Asn
      85             90             95

Arg Pro Pro Ala Asn Ala Lys Asn Thr Ser Pro Ser Arg Ile Ser Arg
      100            105            110

Leu Ser Val Thr Met Arg Asp Thr Gly Leu Phe Ser Asp Gly Ile Gly
      115            120            125

Ser Leu Arg Ala Trp Gln Met Lys Phe Arg Ser Ser Gly Phe Ile Phe
      130            135            140

Ala Phe Val Asn Ile Arg Ala Ala Asp Thr Ser Val Ala Ala Asp Phe
      145            150            155            160

Phe Ile Ala Cys Phe Ala Val Val Lys His Arg Leu Phe Ser His Ser
      165            170            175

His Ser Ala Phe Phe Leu Tyr Val Ser Phe Phe Arg Arg Ile Phe Ser
      180            185            190
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Arg Phe Ala Phe Ser Arg Ile Pro Arg Arg Gly Val Val Gly Leu Ser
195 200 205

Val Asp Lys Gly Lys Val Ile Ala Phe Ala Arg His Ile Gly Asp Ile
210 215 220

Pro Pro Lys Ile Ile Ala Val Ile Gly Gln Leu Val Gly Phe Asp Thr
225 230 235 240

Arg Pro Thr Ala Glu Ser Ala
245

<210> 255

<211> 744

<212> DNA

<213> Neisseria meningitidis

<400> 255

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atgnngttgt tgaagttgcc tgccgtcgcc aacacggcat catcgccgaa acggcggcgc 60
aataccgcag ccagcatttc cttcacgcgc gtcttgccgc ccgaaccggt aatgccgaac 120
acaaacggat tcacattttc acgccacgcc tttgccagcg tttgcaatgc ggcaagcgtg 180
tcatcgactt tcaacgcgcc atccattgca gcacaatctt cgcgcgaaac cacaaccgcc 240
gccgcaccag cagccaatac gtcttcaaca aaatcatgcg cgtcaaaccg ctgcccgcgc 300
aatgcgaaaa acacatcgcc cgcgcgggatg tcgcggctgt cggttacgat gcgcgacacg 360
ggtttgcttt cagacggcat cggaagcttg agggcttggc agatgaaatt taggtccagt 420
ggtttcatat ttacttttct taatattcgg gcggcggaca catcggtagc ggctgatttt 480
tttatcgctt gttttgctgt ggtaaaacac agattatttt cccattctca ttcggsattt 540
tttctgtacg tatcattttt tagacgtatt tttagtcgat ttgccttttc ccgcatacca 600
cggcgcgggg tcgtcgggca gtccgtcgat aaaggcaagg ttattgcctt cgcctgcac 660
atcggaaca tcccccaaa aatcatagcc gtcacgggc aactcgtcgg tttcgatacc 720
cgtccaactg ccgaatccgc gtaa 744
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<210> 256

<211> 247

<212> PRT

<213> Neisseria meningitidis

<400> 256

Met Xaa Leu Leu Lys Leu Pro Ala Val Ala Asn Thr Ala Ser Ser Pro
1 5 10 15

Lys Arg Arg Arg Asn Thr Ala Ala Ser Ile Ser Phe Thr Val Val Leu
20 25 30

Pro Pro Glu Pro Val Met Pro Asn Thr Asn Gly Phe Thr Phe Ser Arg
35 40 45

His Ala Phe Ala Ser Val Cys Asn Ala Ala Ser Val Ser Ser Thr Phe
50 55 60

Asn Ala Pro Ser Ile Ala Ala Gln Ser Ser Arg Glu Thr Thr Thr Ala
65 70 75 80

Ala Ala Pro Ala Ala Asn Thr Ser Ser Thr Lys Ser Cys Ala Ser Asn

	85		90		95
Arg Ser Pro	Ala Asn Ala Lys Asn Thr Ser Pro	Ala Arg Met Ser Arg			
	100	105	110		
Leu Ser Val	Thr Met Arg Asp Thr Gly Leu Leu Ser Asp Gly Ile Gly				
	115	120	125		
Ser Leu Arg	Ala Trp Gln Met Lys Phe Arg Ser Ser Gly Phe Ile Phe				
	130	135	140		
Thr Phe Val	Asn Ile Arg Ala Ala Asp Thr Ser Val Ala Ala Asp Phe				
	145	150	155	160	
Phe Ile Ala	Cys Phe Ala Val Val Lys His Arg Leu Phe Ser His Ser				
	165	170	175		
His Ser Xaa	Phe Phe Leu Tyr Val Ser Phe Phe Arg Arg Ile Phe Ser				
	180	185	190		
Arg Phe Ala	Phe Ser Arg Ile Pro Arg Arg Gly Val Val Gly Gln Ser				
	195	200	205		
Val Asp Lys	Gly Lys Val Ile Ala Phe Ala Leu His Ile Gly Asn Ile				
	210	215	220		
Pro Pro Lys	Ile Ile Ala Val Ile Gly Gln Leu Val Gly Phe Asp Thr				
	225	230	235	240	
Arg Pro Thr	Ala Glu Ser Ala				
	245				

<210> 257
 <211> 744
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 257
 atgtggttgt tgaagttgcc tgccgtcgcc aaaacggcat tatcgccgaa acggcggcgc 60
 aataccgcag ccaacatttc cttcacgcgc gtcttgccgc ccgagccggt aataccgaac 120
 acaaacgggt tcacattctc gcgccacgcc ttccgcaaca ttgcaacgc ggtaagcgtg 180
 tcatcgactt tcaacgcgcc atccattgca acgcaatctt cgcgcgaaac cacaaccgcc 240
 gccgcacccg cagccaatac gtcttcaaca aaatcatgcg catcaaaccg cccgccgcc 300
 aatgcgaaaa acacatcgcc cgcgcggatg tcgcggctgt cggttacgat gcgcgacacg 360
 ggtttgcttt cagacggcat cggaagcttg agggcttggc agatgaaatt taggtccagt 420
 ggtttcatat ttactttcgt taatattcgg gcggcggaca catcggtagc ggctgatttt 480
 tttatcgctt gttttgctgt ggtaaaacac agattatatt cccatttctc ttcggcattt 540
 tttctgtacg tatcattttt tagacgtatt tttagtcgat ttgccttttc ccgcatacca 600
 cggcgcgggg tcgtcgggca gtccgtcgat aaaggcaagg ttattgcctt cgccctgcac 660
 atcgggaaca ttcccccaaa aatcatagcc gtcatcgggc aactcgtcgg tttcgatacc 720
 cgtccaactg ccgaatccgc gtaa 744

<210> 258
 <211> 247
 <212> PRT

<213> Neisseria meningitidis

<400> 258

Met Trp Leu Leu Lys Leu Pro Ala Val Ala Lys Thr Ala Leu Ser Pro
1 5 10 15
Lys Arg Arg Arg Asn Thr Ala Ala Asn Ile Ser Phe Thr Val Val Leu
20 25 30
Pro Pro Glu Pro Val Ile Pro Asn Thr Asn Gly Phe Thr Phe Ser Arg
35 40 45
His Ala Phe Ala Asn Ile Cys Asn Ala Val Ser Val Ser Ser Thr Phe
50 55 60
Asn Ala Pro Ser Ile Ala Thr Gln Ser Ser Arg Glu Thr Thr Thr Ala
65 70 75 80
Ala Ala Pro Ala Ala Asn Thr Ser Ser Thr Lys Ser Cys Ala Ser Asn
85 90 95
Arg Pro Pro Ala Asn Ala Lys Asn Thr Ser Pro Ala Arg Met Ser Arg
100 105 110
Leu Ser Val Thr Met Arg Asp Thr Gly Leu Leu Ser Asp Gly Ile Gly
115 120 125
Ser Leu Arg Ala Trp Gln Met Lys Phe Arg Ser Ser Gly Phe Ile Phe
130 135 140
Thr Phe Val Asn Ile Arg Ala Ala Asp Thr Ser Val Ala Ala Asp Phe
145 150 155 160
Phe Ile Ala Cys Phe Ala Val Val Lys His Arg Leu Phe Ser His Ser
165 170 175
His Ser Ala Phe Phe Leu Tyr Val Ser Phe Phe Arg Arg Ile Phe Ser
180 185 190
Arg Phe Ala Phe Ser Arg Ile Pro Arg Arg Gly Val Val Gly Gln Ser
195 200 205
Val Asp Lys Gly Lys Val Ile Ala Phe Ala Leu His Ile Gly Asn Ile
210 215 220
Pro Pro Lys Ile Ile Ala Val Ile Gly Gln Leu Val Gly Phe Asp Thr
225 230 235 240
Arg Pro Thr Ala Glu Ser Ala
245

<210> 259

<211> 696

<212> DNA

<213> Neisseria gonorrhoeae

<400> 259

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atgaaacaat cgcgccgaat aaaaaatatg gatcagacat taaaaaatac attgggcatt 60
tgcgcgcttt tagccttttg ttttggcgcg gccatcgcat caggttatca cttggaatat 120
gaatacggct accgttatcc tgccgtgggc gctttgctt cggttgtatt tttattatta 180
ttggcacgcg gcttcccgcg cgtttcttca gttgttttac tgatttacgt cggcacaacc 240
gccctatatt tgccggtcgg ctggctgtat ggtgcgcctt cttatcagat agtcggttcg 300
atattggaaa gcaatcctgc cgaggcgcggt gaatttgctg gcaatcttcc cgggtcgctt 360
tattttgtgc aggcattatt ttcatTTTTT ggcttgacag tttggaaata ttgtgtatct 420
gtgggggtat ttgctgacgt aaaaaactat aaacgtcgca gcaaaatatg gctgaccata 480
ttattgactt tgattttgtc ctgcgcggtg atggagaaaa tcgccggcga taaagattgg 540
cgagaacctg atgccggcct gttgttgaat attttcgacc tgtattacga cttggctttc 600
cgcgccgcca caatatgccg ccaagcgcg cccacattttg gaagcagcaa aaaaagcgtc 660
aacatggcat atccgccaac ttgcgcccaa gtataa 696
```

<210> 260

<211> 231

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 260

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Met Lys Gln Ser Ala Arg Ile Lys Asn Met Asp Gln Thr Leu Lys Asn
  1             5             10             15

Thr Leu Gly Ile Cys Ala Leu Leu Ala Phe Cys Phe Gly Ala Ala Ile
  20             25             30

Ala Ser Gly Tyr His Leu Glu Tyr Glu Tyr Gly Tyr Arg Tyr Ser Ala
  35             40             45

Val Gly Ala Leu Ala Ser Val Val Phe Leu Leu Leu Leu Ala Arg Gly
  50             55             60

Phe Pro Arg Val Ser Ser Val Val Leu Leu Ile Tyr Val Gly Thr Thr
  65             70             75             80

Ala Leu Tyr Leu Pro Val Gly Trp Leu Tyr Gly Ala Pro Ser Tyr Gln
  85             90             95

Ile Val Gly Ser Ile Leu Glu Ser Asn Pro Ala Glu Ala Arg Glu Phe
 100            105            110

Val Gly Asn Leu Pro Gly Ser Leu Tyr Phe Val Gln Ala Leu Phe Phe
 115            120            125

Ile Phe Gly Leu Thr Val Trp Lys Tyr Cys Val Ser Val Gly Val Phe
 130            135            140

Ala Asp Val Lys Asn Tyr Lys Arg Arg Ser Lys Ile Trp Leu Thr Ile
 145            150            155            160

Leu Leu Thr Leu Ile Leu Ser Cys Ala Val Met Glu Lys Ile Ala Gly
 165            170            175

Asp Lys Asp Trp Arg Glu Pro Asp Ala Gly Leu Leu Leu Asn Ile Phe
 180            185            190
```

Asp Leu Tyr Tyr Asp Leu Ala Phe Arg Ala Gly Thr Ile Cys Arg Gln
 195 200 205

Ala Arg Pro His Phe Gly Ser Ser Lys Lys Ser Val Asn Met Ala Tyr
 210 215 220

Pro Pro Thr Cys Ala Gln Val
 225 230

<210> 261
 <211> 694
 <212> DNA
 <213> Neisseria meningitidis

<400> 261
 atgaaacaat ccgcccgaat aaaaatatga atcagacatt actttataca ttgggcattt 60
 gcgcgcgtttt aaccttttnnn nnnnnnnnnnn nnnnnnnnnnn nnnntatcac ccngaatatg 120
 aatacggcta ccgttattct gccgtgggtg ctttggttc ggttgattt ttattattat 180
 tggcacgcgg tttcccgcgc gtttcttcag ttgttttact gatttacgtc ggcacaaccg 240
 ccctatattt gccggtcggc tggtgtgatg gtgcgccgtc ttatcagata gtcggttcga 300
 tattggaaag caatcctgcc gaggcgcgtg aatttgtcgg caatcttccc gggtcgcgtt 360
 attttgtgca ggcattattt ttcatttttg gcttgacagt ttggaaatat tgtgtatcgg 420
 ggggggtatt tgctgacgta aaaaactata aacgccgcag caaaatatgg ctgactatat 480
 tattgacttt gattttgtcc tgcgcggtga tggataaaat cgccagcgat aaagatttgc 540
 gagaacctga tgccggcctg ttgttgaata ttttcgacct gtattacgat ttggcttccg 600
 cgccggcaca atatgccgcc aagcgcgccc acatttttga agcagcaaaa aaagcgtcaa 660
 catggcatat ccgtcatgtt gcgcccaagt ataa 694

<210> 262
 <211> 231
 <212> PRT
 <213> Neisseria meningitidis

<400> 262
 Met Lys Gln Ser Ala Arg Ile Lys Xaa Met Asn Gln Thr Leu Leu Tyr
 1 5 10 15
 Thr Leu Gly Ile Cys Ala Leu Leu Thr Phe Xaa Xaa Xaa Xaa Xaa Xaa
 20 25 30
 Xaa Xaa Xaa Tyr His Pro Glu Tyr Glu Tyr Gly Tyr Arg Tyr Ser Ala
 35 40 45
 Val Gly Ala Leu Ala Ser Val Val Phe Leu Leu Leu Leu Ala Arg Gly
 50 55 60
 Phe Pro Arg Val Ser Ser Val Val Leu Leu Ile Tyr Val Gly Thr Thr
 65 70 75 80
 Ala Leu Tyr Leu Pro Val Gly Trp Leu Tyr Gly Ala Pro Ser Tyr Gln
 85 90 95
 Ile Val Gly Ser Ile Leu Glu Ser Asn Pro Ala Glu Ala Arg Glu Phe
 100 105 110

Val Gly Asn Leu Pro Gly Ser Leu Tyr Phe Val Gln Ala Leu Phe Phe
115 120 125

Ile Phe Gly Leu Thr Val Trp Lys Tyr Cys Val Ser Gly Gly Val Phe
130 135 140

Ala Asp Val Lys Asn Tyr Lys Arg Arg Ser Lys Ile Trp Leu Thr Ile
145 150 155 160

Leu Leu Thr Leu Ile Leu Ser Cys Ala Val Met Asp Lys Ile Ala Ser
165 170 175

Asp Lys Asp Leu Arg Glu Pro Asp Ala Gly Leu Leu Leu Asn Ile Phe
180 185 190

Asp Leu Tyr Tyr Asp Leu Ala Xaa Arg Ala Gly Thr Ile Cys Arg Gln
195 200 205

Ala Arg Pro His Phe Gly Ser Ser Lys Lys Ser Val Asn Met Ala Tyr
210 215 220

Pro Ser Cys Cys Ala Gln Val
225 230

<210> 263
<211> 695
<212> DNA
<213> Neisseria meningitidis

<400> 263
atgaaacaat cgcgccgaat aaaaaaatatg gatcagacat taaaaaatac attgggcatt 60
tgcgcgcttt tagccttttg ttttggcgcg gccatcgcat caggttatca cttggaatat 120
gaatacggct accgttattc tgccgtgggt gctttggctt cggttgtatt tttattatta 180
ttggcacgcg gtttccgcg cgtttcttca gttgttttac tgatttacgt cggcacaacc 240
gccctatatt tgccggtcgg ctggctgtat ggtgcgcgct cttatcagat agtcggttcg 300
atattggaat gcaatcctgc cgaggcgct gaatttgtcg gcaatcttcc cgggtcgctt 360
tattttgtgc aggcatatt tttcattttt ggcttgacag tttggagata ttgtgtatcg 420
gggggggtat ttgctgacgt aaaaaactat aaacgccgca gcaaaatatg gctgactata 480
ttattgactt tgattttgtc ctgcgcggtg atggataaaa tcgccagcga taaagatttg 540
cgagaacctg atgccggcct gttgttgaat attttcgacc tgtattacga tttggcttcc 600
gcgcgggcac aatatgccgc caagcgcgcc cacattttgg aagcagcaaa aaaagcgtca 660
acattggcata tccgtcatgt tgcgcccaag tataa 695

<210> 264
<211> 231
<212> PRT
<213> Neisseria meningitidis

<400> 264
Met Lys Gln Ser Ala Arg Ile Lys Asn Met Asp Gln Thr Leu Lys Asn
1 5 10 15

Thr Leu Gly Ile Cys Ala Leu Leu Ala Phe Cys Phe Gly Ala Ala Ile
20 25 30

Ala Ser Gly Tyr His Leu Glu Tyr Glu Tyr Gly Tyr Arg Tyr Ser Ala
35 40 45

Val Gly Ala Leu Ala Ser Val Val Phe Leu Leu Leu Leu Ala Arg Gly
50 55 60

Phe Pro Arg Val Ser Ser Val Val Leu Leu Ile Tyr Val Gly Thr Thr
65 70 75 80

Ala Leu Tyr Leu Pro Val Gly Trp Leu Tyr Gly Ala Pro Ser Tyr Gln
85 90 95

Ile Val Gly Ser Ile Leu Glu Ser Asn Pro Ala Glu Ala Arg Glu Phe
100 105 110

Val Gly Asn Leu Pro Gly Ser Leu Tyr Phe Val Gln Ala Leu Phe Phe
115 120 125

Ile Phe Gly Leu Thr Val Trp Arg Tyr Cys Val Ser Gly Gly Val Phe
130 135 140

Ala Asp Val Lys Asn Tyr Lys Arg Arg Ser Lys Ile Trp Leu Thr Ile
145 150 155 160

Leu Leu Thr Leu Ile Leu Ser Cys Ala Val Met Asp Lys Ile Ala Ser
165 170 175

Asp Lys Asp Leu Arg Glu Pro Asp Ala Gly Leu Leu Leu Asn Ile Phe
180 185 190

Asp Leu Tyr Tyr Asp Leu Ala Ser Xaa Ala Gly Thr Ile Cys Arg Gln
195 200 205

Ala Arg Pro His Phe Gly Ser Ser Lys Lys Ser Val Asn Met Ala Tyr
210 215 220

Pro Ser Cys Cys Ala Gln Val
225 230

<210> 265

<211> 285

<212> DNA

<213> Neisseria gonorrhoeae

<400> 265

atgggcaaag ggcaggactt caccgccctg cgcgacgcgt tgaaagataa ggcaaaaggc 60
gtgttcctga tcggcgctga tgcgccgcaa atccgccgcg atttgacgg ctgcggcttg 120
aacctgaccg actgcgtcac tttggaagag gcgggttcaga cggcatacgc ccaagccgaa 180
gcgggcgata ttgtcttgct cagccccgcc tgcgcgagtt tcgatatggt taaaggctac 240
gcgcaccggt cggaagtgtt tatcgaagcg ttaaggctt tgtga 285

<210> 266

<211> 94

<212> PRT

<213> Neisseria gonorrhoeae

<400> 266

Met Gly Lys Gly Gln Asp Phe Thr Pro Leu Arg Asp Ala Leu Lys Asp
1 5 10 15

Lys Ala Lys Gly Val Phe Leu Ile Gly Val Asp Ala Pro Gln Ile Arg
20 25 30

Arg Asp Leu Asp Gly Cys Gly Leu Asn Leu Thr Asp Cys Val Thr Leu
35 40 45

Glu Glu Ala Val Gln Thr Ala Tyr Ala Gln Ala Glu Ala Gly Asp Ile
50 55 60

Val Leu Leu Ser Pro Ala Cys Ala Ser Phe Asp Met Phe Lys Gly Tyr
65 70 75 80

Ala His Arg Ser Glu Val Phe Ile Glu Ala Phe Lys Ala Leu
85 90

<210> 267

<211> 285

<212> DNA

<213> Neisseria meningitidis

<400> 267

atgggtaaag ggcaggactt cacgcccctg cgcgatgcac tggtaggcaa ggcaaaaggc 60
gtgttcttga ttggtgtcga tgcgcgcgcaa atccgcgcgcg atttggacgg ctgcggcttg 120
aatatgaccg actgcgccac tttgggagaa gccgttcaga cggcatatgc ccaagccgaa 180
gcaggcgata ttgtgttgct cagccccgcc tgcgcgagct ttgatatggt caaaggctac 240
gcgcaccggt cggaagtgtt tatcgaagcg tttaaggctt tgtga 285

<210> 268

<211> 94

<212> PRT

<213> Neisseria meningitidis

<400> 268

Met Gly Lys Gly Gln Asp Phe Thr Pro Leu Arg Asp Ala Leu Val Gly
1 5 10 15

Lys Ala Lys Gly Val Phe Leu Ile Gly Val Asp Ala Pro Gln Ile Arg
20 25 30

Arg Asp Leu Asp Gly Cys Gly Leu Asn Met Thr Asp Cys Ala Thr Leu
35 40 45

Gly Glu Ala Val Gln Thr Ala Tyr Ala Gln Ala Glu Ala Gly Asp Ile
50 55 60

Val Leu Leu Ser Pro Ala Cys Ala Ser Phe Asp Met Phe Lys Gly Tyr
65 70 75 80

Ala His Arg Ser Glu Val Phe Ile Glu Ala Phe Lys Ala Leu

<210> 269
 <211> 285
 <212> DNA
 <213> *Neillia sinensis*

<400> 269
 atgggcaaaag ggcaggactt cacgcccctg cgcgacgcgc ttgccggcaa ggcaaaaggc 60
 gtgttcctga tcggtgtcga tgcgcgcgcaa atccgccgcg atttgacggt ctgcgatctg 120
 aatatgaccg actgcgccac tttggaagaa gcggttcaga aggcataatgc ccaagccgaa 180
 gcgggcgata tcgtgctgct cagccccgcc tgcgcgagtt tcgatatggt taaaggctac 240
 gcgcaccggt cggaagtgtt tatcggggcg tttaaggctt tgtga 285

<210> 270
 <211> 94
 <212> PRT
 <213> *Neisseria meningitidis*

<400> 270
 Met Gly Lys Gly Gln Asp Phe Thr Pro Leu Arg Asp Ala Leu Ala Gly
 1 5 10 15
 Lys Ala Lys Gly Val Phe Leu Ile Gly Val Asp Ala Pro Gln Ile Arg
 20 25 30
 Arg Asp Leu Asp Gly Cys Asp Leu Asn Met Thr Asp Cys Ala Thr Leu
 35 40 45
 Glu Glu Ala Val Gln Lys Ala Tyr Ala Gln Ala Glu Ala Gly Asp Ile
 50 55 60
 Val Leu Leu Ser Pro Ala Cys Ala Ser Phe Asp Met Phe Lys Gly Tyr
 65 70 75 80
 Ala His Arg Ser Glu Val Phe Ile Gly Ala Phe Lys Ala Leu
 85 90

<210> 271
 <211> 1192
 <212> DNA
 <213> *Neisseria gonorrhoeae*

<400> 271
 atggtggtgc tgatgacggc gttcggcctg ctgatgattt attcggcttc tgtgtatttg 60
 gcatcgaagg aaggcggcga tcagtttttc tatttgacca ggcaggcggg gttcgtcgtt 120
 gccggcctta tagcgagcgg ttttttatgg tttctttgca ggatgaggac atggcggcgg 180
 cttgtgccgt ggatttttgc cttatccggc ctgttgctgg tagccgtatt gattgccggg 240
 cgcgaaatca atggcgcgac ccgttggata cctttgggtc cgttgaattt ccagccgacc 300
 gagctgttca agctggcagt catcctttat ttggcaagcc tgttcacgcg ccgtgaagaa 360
 gtgttgcgca gcatggaag tttgggttgg cagtcgattt ggcgggggac ggccaacctg 420
 attatgtccg ccaccaatcc gcaggcacgt cgtgaaacat tagaaatgta cggccgtttc 480
 cgggcgatca tcctgccgat tatgctggtg gcgttcggtt tgggtgctgat aatggtacag 540
 ccggatttcg gttcgtttgt cgtcattacc gtcattacc ttggaatgct gtttctggca 600

ggattgccgt ggaaatattt ttttgtcctg gtaggcagcg tcttgsggtgg gatggtgctg 660
 atgattaccg cgcctcccta ccgtgtgcag cgggtagtgg catttttgga cccgtggaaa 720
 gaccgcagg gtgccggcta ccagcttacc cactctctga tggcaatcgg gcgcggagag 780
 tggttcggta tgggttttggg tgcgagtttg agcaaacgcg gctttctgcc ggaagcgcag 840
 accgatttta tttttgccat catcgctgaa gaattcggct tcttcgggat gtgcgtgctg 900
 atattctgtt acggctggct ggtggtgcgg gcgttttcca tcggcaagca gtcgcgcgat 960
 ttgggtttga ctttcaacgc ctatatcgct tcgggtatcg gcatttgat cggtatccaa 1020
 agtttcttca atatcgggtg gaacatcggg gctttgccga ccaaaggtct gacgctgccg 1080
 ttgatgtcct atggcgggtc gtcagtcttt ttcagtctga tcagcatgat gctgctgttg 1140
 cgtatcgatt atgaaaaccg ccagaaaatg cgcggttacc ggggtggagta aa 1192

<210> 272

<211> 396

<212> PRT

<213> Neisseria gonorrhoeae

<400> 272

Met	Val	Val	Leu	Met	Thr	Ala	Phe	Gly	Leu	Leu	Met	Ile	Tyr	Ser	Ala	
1				5					10						15	
Ser	Val	Tyr	Leu	Ala	Ser	Lys	Glu	Gly	Gly	Asp	Gln	Phe	Phe	Tyr	Leu	
			20					25					30			
Thr	Arg	Gln	Ala	Gly	Phe	Val	Val	Ala	Gly	Leu	Ile	Ala	Ser	Gly	Phe	
		35					40					45				
Leu	Trp	Phe	Leu	Cys	Arg	Met	Arg	Thr	Trp	Arg	Arg	Leu	Val	Pro	Trp	
	50					55					60					
Ile	Phe	Ala	Leu	Ser	Gly	Leu	Leu	Leu	Val	Ala	Val	Leu	Ile	Ala	Gly	
	65				70					75					80	
Arg	Glu	Ile	Asn	Gly	Ala	Thr	Arg	Trp	Ile	Pro	Leu	Gly	Pro	Leu	Asn	
				85					90					95		
Phe	Gln	Pro	Thr	Glu	Leu	Phe	Lys	Leu	Ala	Val	Ile	Leu	Tyr	Leu	Ala	
		100						105					110			
Ser	Leu	Phe	Thr	Arg	Arg	Glu	Glu	Val	Leu	Arg	Ser	Met	Glu	Ser	Leu	
		115					120					125				
Gly	Trp	Gln	Ser	Ile	Trp	Arg	Gly	Thr	Ala	Asn	Leu	Ile	Met	Ser	Ala	
	130					135					140					
Thr	Asn	Pro	Gln	Ala	Arg	Arg	Glu	Thr	Leu	Glu	Met	Tyr	Gly	Arg	Phe	
145					150					155					160	
Arg	Ala	Ile	Ile	Leu	Pro	Ile	Met	Leu	Val	Ala	Phe	Gly	Leu	Val	Leu	
				165					170					175		
Ile	Met	Val	Gln	Pro	Asp	Phe	Gly	Ser	Phe	Val	Val	Ile	Thr	Val	Ile	
		180						185					190			
Thr	Val	Gly	Met	Leu	Phe	Leu	Ala	Gly	Leu	Pro	Trp	Lys	Tyr	Phe	Phe	
	195						200					205				

Val Leu Val Gly Ser Val Leu Gly Gly Met Val Leu Met Ile Thr Ala
 210 215 220
 Ala Pro Tyr Arg Val Gln Arg Val Val Ala Phe Leu Asp Pro Trp Lys
 225 230 235 240
 Asp Pro Gln Gly Ala Gly Tyr Gln Leu Thr His Ser Leu Met Ala Ile
 245 250 255
 Gly Arg Gly Glu Trp Phe Gly Met Gly Leu Gly Ala Ser Leu Ser Lys
 260 265 270
 Arg Gly Phe Leu Pro Glu Ala His Thr Asp Phe Ile Phe Ala Ile Ile
 275 280 285
 Ala Glu Glu Phe Gly Phe Phe Gly Met Cys Val Leu Ile Phe Cys Tyr
 290 295 300
 Gly Trp Leu Val Val Arg Ala Phe Ser Ile Gly Lys Gln Ser Arg Asp
 305 310 315 320
 Leu Gly Leu Thr Phe Asn Ala Tyr Ile Ala Ser Gly Ile Gly Ile Trp
 325 330 335
 Ile Gly Ile Gln Ser Phe Phe Asn Ile Gly Val Asn Ile Gly Ala Leu
 340 345 350
 Pro Thr Lys Gly Leu Thr Leu Pro Leu Met Ser Tyr Gly Gly Ser Ser
 355 360 365
 Val Phe Phe Met Leu Ile Ser Met Met Leu Leu Leu Arg Ile Asp Tyr
 370 375 380
 Glu Asn Arg Gln Lys Met Arg Gly Tyr Arg Val Glu
 385 390 395

<210> 273

<211> 1190

<212> DNA

<213> Neisseria meningitidis

<400> 273

atggtggtgc tgatgacggc gttcagcctg ctgatgattt attcggcttc tgtgtatttg 60
 gcatcaaaag aaggcggcga tcagtttttc tatttgacca gacaggcggg gttcgtcggt 120
 gccggcttga tagcgagcgg tttgttatgg tttctttgca ggatgaggac atggcggcgg 180
 cttgtgccgt ggatttttgc cctatccggc ctgttgctgg tagtcgtatt gattgccggg 240
 cgcgaaatca atggcgcgac ccgttgata cctttgggtc cgttgaattt ccagccgacc 300
 gagctgttca agctggcggg catcctttat ttggcaagcc tgttcacgcg ccgtgaagaa 360
 gtgttgcgca gcatggaaaag tttgggttgg cagtcgattt ggcgggggac ggccaatctg 420
 atcatgtccg ccaccaatcc gcagrcacgt cgtgaaacat tagaaatgta cggccgtwtc 480
 cgggcgatca tctgtccgat tatgctgggt gcgttcgggt tgggtgctgat aatggtacag 540
 ccggatttgc gttcgtttgt cgtcattacc gtcattgccg ttggaatgct gtttttggca 600
 ggattgccgt ggaaatattt tttcgtcctg gtaggcagcg tcttgggcgg gatggtgctg 660
 atgattaccg ccgctcccta ccgtgtgcag cgggtagtgg catttttga cccgtggaaa 720
 gacccgcagg gtgccggcta ccagcttacc cactctctga tggcaatcgg gcgcggagag 780
 tggttcggta tgggttttgg tgcgagtttg agcaaacgcg gctttctgcc ggaagcgcag 840

accgatttta tttttgccat catcgccgaa gaattcgggt ttttcgggtat gtgcgtgctg 900
 atattctgtt acggctggct ggtggtgcgg gcgttttcca tcggcaagca gtcgcgcgat 960
 ttgggtttga ctttcaacgc ctatatcgct tcgggtatcg gcatttgat cggkrtccaa 1020
 agtttcttca atatcggtgt gaacatcggt gctttgccga mcaaaggycg gacgcygccg 1080
 tgatgtccwa tggcggttcg tcagtctttt tcatgctgat cagcatgatg ctgctgtkgc 1140
 gtatagatta tgaaaaccgc cggaaaatgc gcggttatcg ggtggagtaa 1190

<210> 274

<211> 396

<212> PRT

<213> Neisseria meningitidis

<400> 274

Met	Val	Val	Leu	Met	Thr	Ala	Phe	Ser	Leu	Leu	Met	Ile	Tyr	Ser	Ala
1				5					10					15	
Ser	Val	Tyr	Leu	Ala	Ser	Lys	Glu	Gly	Gly	Asp	Gln	Phe	Phe	Tyr	Leu
			20					25					30		
Thr	Arg	Gln	Ala	Gly	Phe	Val	Val	Ala	Gly	Leu	Ile	Ala	Ser	Gly	Leu
		35					40					45			
Leu	Trp	Phe	Leu	Cys	Arg	Met	Arg	Thr	Trp	Arg	Arg	Leu	Val	Pro	Trp
	50					55					60				
Ile	Phe	Ala	Leu	Ser	Gly	Leu	Leu	Leu	Val	Val	Val	Leu	Ile	Ala	Gly
	65				70					75					80
Arg	Glu	Ile	Asn	Gly	Ala	Thr	Arg	Trp	Ile	Pro	Leu	Gly	Pro	Leu	Asn
			85						90					95	
Phe	Gln	Pro	Thr	Glu	Leu	Phe	Lys	Leu	Ala	Val	Ile	Leu	Tyr	Leu	Ala
			100					105					110		
Ser	Leu	Phe	Thr	Arg	Arg	Glu	Glu	Val	Leu	Arg	Ser	Met	Glu	Ser	Leu
		115					120					125			
Gly	Trp	Gln	Ser	Ile	Trp	Arg	Gly	Thr	Ala	Asn	Leu	Ile	Met	Ser	Ala
	130					135					140				
Thr	Asn	Pro	Gln	Xaa	Arg	Arg	Glu	Thr	Leu	Glu	Met	Tyr	Gly	Arg	Xaa
	145				150					155				160	
Arg	Ala	Ile	Ile	Leu	Pro	Ile	Met	Leu	Val	Ala	Phe	Gly	Leu	Val	Leu
			165					170					175		
Ile	Met	Val	Gln	Pro	Asp	Phe	Gly	Ser	Phe	Val	Val	Ile	Thr	Val	Ile
		180						185					190		
Ala	Val	Gly	Met	Leu	Phe	Leu	Ala	Gly	Leu	Pro	Trp	Lys	Tyr	Phe	Phe
		195					200					205			
Val	Leu	Val	Gly	Ser	Val	Leu	Gly	Gly	Met	Val	Leu	Met	Ile	Thr	Ala
	210					215					220				

Ala Pro Tyr Arg Val Gln Arg Val Val Ala Phe Leu Asp Pro Trp Lys
 225 230 235 240
 Asp Pro Gln Gly Ala Gly Tyr Gln Leu Thr His Ser Leu Met Ala Ile
 245 250 255
 Gly Arg Gly Glu Trp Phe Gly Met Gly Leu Gly Ala Ser Leu Ser Lys
 260 265 270
 Arg Gly Phe Leu Pro Glu Ala His Thr Asp Phe Ile Phe Ala Ile Ile
 275 280 285
 Ala Glu Glu Phe Gly Phe Phe Gly Met Cys Val Leu Ile Phe Cys Tyr
 290 295 300
 Gly Trp Leu Val Val Arg Ala Phe Ser Ile Gly Lys Gln Ser Arg Asp
 305 310 315 320
 Leu Gly Leu Thr Phe Asn Ala Tyr Ile Ala Ser Gly Ile Gly Ile Trp
 325 330 335
 Ile Gly Xaa Gln Ser Phe Phe Asn Ile Gly Val Asn Ile Gly Ala Leu
 340 345 350
 Pro Xaa Lys Gly Leu Thr Xaa Pro Xaa Met Ser Xaa Gly Gly Ser Ser
 355 360 365
 Val Phe Phe Met Leu Ile Ser Met Met Leu Leu Xaa Arg Ile Asp Tyr
 370 375 380
 Glu Asn Arg Arg Lys Met Arg Gly Tyr Arg Val Glu
 385 390 395

<210> 275

<211> 1191

<212> DNA

<213> *Neisseria meningitidis*

<400> 275

atggtggtgc tgatgacggc gttcagcctg ctgatgattt attcggcttc tgtgtatttg 60
 gcatcaaaag aaggcggcga tcagtttttc tatttgacca gacaggcggg gttcgtcgtt 120
 gccggcttga tagcgagcgg tttgttatgg tttctttgca ggatgaggac atggcggcgg 180
 cttgtgccgt ggatttttgc cctatccggc ctggtgctgg tagtcgtatt gattgccggg 240
 cgcgaaatca atggcgcgac ccgttggata cctttgggtc cgttgaattt ccagccgacc 300
 gagctgttca agctggcggc catcctttat ttggcaagcc tgttcacgcg ccgtgaagaa 360
 gtgttgccga gcatggaaag tttgggttgg cagtcgattt ggccgggggac ggccaatctg 420
 atcatgtccg ccaccaatcc gcaggcacgt cgtgaaacat tagaaatgta cggccgtttc 480
 cgggcgatca tcttgccgat tatgctggtg gcgttcggtt tgggtgctgat aatggtacag 540
 ccggatttgc gttcgtttgt cgtcattacc gtcattgccg ttggaatgct gtttttggca 600
 ggattgccgt ggaaatattt tttcgtcctg gtaggcagcg tcttgggcgg gatggtgctg 660
 atgattaccg ccgtcccta ccgtgtgcag cgggtagtgg catttttggc cccgtggaaa 720
 gaccgcaggg gtgccggcta ccagcttacc cactctctga tggcaatcgg gcgcggagag 780
 tggttcggta tgggtttggg tgcgagtttg agcaaacgcg gctttctgcc ggaagcgcac 840
 accgatttta tttttgcat catcgccgaa gaattcgggt tcttcggtat gtgcgtgctg 900
 atattctggt acggtggtg ggtggtgcgg gcgttttcca tcggcaagca gtcgcgcgat 960
 ttgggtttga ctttcaacgc ctatatcgtc tcgggtatcg gcatttgat cggtatccaa 1020

agtttcttca atatcggtgt gaacatcggt gctttgccga ccaaaggtct gacgctgccg 1080
 ttgatgtcct atggcggttc gtcagtcttt ttcagtctga tcagcatgat gctgctgttg 1140
 cgtatagatt atgaaaaccg ccggaatacg cgcggttacc gggaggagta a 1191

<210> 276

<211> 396

<212> PRT

<213> Neisseria meningitidis

<400> 276

Met Val Val Leu Met Thr Ala Phe Ser Leu Leu Met Ile Tyr Ser Ala
 1 5 10 15

Ser Val Tyr Leu Ala Ser Lys Glu Gly Gly Asp Gln Phe Phe Tyr Leu
 20 25 30

Thr Arg Gln Ala Gly Phe Val Val Ala Gly Leu Ile Ala Ser Gly Leu
 35 40 45

Leu Trp Phe Leu Cys Arg Met Arg Thr Trp Arg Arg Leu Val Pro Trp
 50 55 60

Ile Phe Ala Leu Ser Gly Leu Leu Leu Val Val Val Leu Ile Ala Gly
 65 70 75 80

Arg Glu Ile Asn Gly Ala Thr Arg Trp Ile Pro Leu Gly Pro Leu Asn
 85 90 95

Phe Gln Pro Thr Glu Leu Phe Lys Leu Ala Val Ile Leu Tyr Leu Ala
 100 105 110

Ser Leu Phe Thr Arg Arg Glu Glu Val Leu Arg Ser Met Glu Ser Leu
 115 120 125

Gly Trp Gln Ser Ile Trp Arg Gly Thr Ala Asn Leu Ile Met Ser Ala
 130 135 140

Thr Asn Pro Gln Ala Arg Arg Glu Thr Leu Glu Met Tyr Gly Arg Phe
 145 150 155 160

Arg Ala Ile Ile Leu Pro Ile Met Leu Val Ala Phe Gly Leu Val Leu
 165 170 175

Ile Met Val Gln Pro Asp Phe Gly Ser Phe Val Val Ile Thr Val Ile
 180 185 190

Ala Val Gly Met Leu Phe Leu Ala Gly Leu Pro Trp Lys Tyr Phe Phe
 195 200 205

Val Leu Val Gly Ser Val Leu Gly Gly Met Val Leu Met Ile Thr Ala
 210 215 220

Ala Pro Tyr Arg Val Gln Arg Val Val Ala Phe Leu Asp Pro Trp Lys
 225 230 235 240

Asp Pro Gln Gly Ala Gly Tyr Gln Leu Thr His Ser Leu Met Ala Ile

	245		250		255
Gly Arg Gly Glu Trp Phe Gly Met Gly Leu Gly Ala Ser Leu Ser Lys					
	260		265		270
Arg Gly Phe Leu Pro Glu Ala His Thr Asp Phe Ile Phe Ala Ile Ile					
	275		280		285
Ala Glu Glu Phe Gly Phe Phe Gly Met Cys Val Leu Ile Phe Cys Tyr					
	290		295		300
Gly Trp Leu Val Val Arg Ala Phe Ser Ile Gly Lys Gln Ser Arg Asp					
	305		310		315
Leu Gly Leu Thr Phe Asn Ala Tyr Ile Ala Ser Gly Ile Gly Ile Trp					
			325		330
Ile Gly Ile Gln Ser Phe Phe Asn Ile Gly Val Asn Ile Gly Ala Leu					
			340		345
Pro Thr Lys Gly Leu Thr Leu Pro Leu Met Ser Tyr Gly Gly Ser Ser					
	355		360		365
Val Phe Phe Met Leu Ile Ser Met Met Leu Leu Leu Arg Ile Asp Tyr					
	370		375		380
Glu Asn Arg Arg Lys Met Arg Gly Tyr Arg Val Glu					
	385		390		395

<210> 277
 <211> 1069
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 277
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 ctggctgtgg cggattcatt gcgcgtgcgc ggtcatcatg taatttggct gggcagcaag 120
 gattcgatgg aagagcgcac cgtgccgcaa tacggcatac gcttggaac gctggcgatt 180
 aaagggaatac gcggcaacgg catcaaacgc aagctgatgc ttccgtttac tctgtacaaa 240
 accgtccgcg aagcgcagcg gattatccgc aaacacogtg tcgagtgcgt catcggttc 300
 ggcggttttg ttacctttcc cggcggtctg gcggcgaaac tcttgggcgt gccgattgtg 360
 attcacgagc aaaacgccgt ggcaggcttg tccaaccgcc acctgtcgcg ctgggcgaaa 420
 cgggtgttgt acgcttttcc gaaagcgttc agccacgaag gcggtttggt cggcaacccc 480
 gtccgcgccg atattagcaa cctgcccggtg cctgccgaac gcttccaagg gcgcgaaggc 540
 cgtctgaaaa ttttggtggt cggcggcagt ttgggtgcgg acgttttgaa caaaaccgta 600
 ccgcaggcgt tggcactgct gcctgaagag gtgcgccgcg agatgtacca ccagtcgggg 660
 cgtaacaagc tgggcaatct tcaggcggat tatgacgcgt tgggcgtgaa agcgggaatgc 720
 gtggaattta ttaccgacat ggtgtccgcc taocgtgatg ccgatttggg gatttgccgt 780
 gccggcgcgc tgacgattgc cgagttgacg gcggcggggc tgggcgcgtt gttagtgcg 840
 tatcctcacg ccgttgatga ccatcaaacc gccaacgcgc gtttcatggt gcaggcagaa 900
 gcggggctgc tgttgccgca aaccagttg acggcggaaa aactcgccga aatcctcggc 960
 agcctcaacc gcgaaaaatg cctcaaattg gcggaaaacg cccgtacgtt ggcattgccg 1020
 cacagcgcg atgacgttgc cgaagccgcg attgcgtgtg cggcgtaaa 1069

<210> 278

<211> 355
<212> PRT
<213> Neisseria gonorrhoeae

<400> 278

Met Gly Gly Lys Thr Phe Met Leu Met Ala Gly Gly Thr Gly Gly His
1 5 10 15
Ile Phe Pro Ala Leu Ala Val Ala Asp Ser Leu Arg Val Arg Gly His
20 25 30
His Val Ile Trp Leu Gly Ser Lys Asp Ser Met Glu Glu Arg Ile Val
35 40 45
Pro Gln Tyr Gly Ile Arg Leu Glu Thr Leu Ala Ile Lys Gly Ile Arg
50 55 60
Gly Asn Gly Ile Lys Arg Lys Leu Met Leu Pro Phe Thr Leu Tyr Lys
65 70 75 80
Thr Val Arg Glu Ala Gln Arg Ile Ile Arg Lys His Arg Val Glu Cys
85 90 95
Val Ile Gly Phe Gly Gly Phe Val Thr Phe Pro Gly Gly Leu Ala Ala
100 105 110
Lys Leu Leu Gly Val Pro Ile Val Ile His Glu Gln Asn Ala Val Ala
115 120 125
Gly Leu Ser Asn Arg His Leu Ser Arg Trp Ala Lys Arg Val Leu Tyr
130 135 140
Ala Phe Pro Lys Ala Phe Ser His Glu Gly Gly Leu Val Gly Asn Pro
145 150 155 160
Val Arg Ala Asp Ile Ser Asn Leu Pro Val Pro Ala Glu Arg Phe Gln
165 170 175
Gly Arg Glu Gly Arg Leu Lys Ile Leu Val Val Gly Gly Ser Leu Gly
180 185 190
Ala Asp Val Leu Asn Lys Thr Val Pro Gln Ala Leu Ala Leu Leu Pro
195 200 205
Glu Glu Val Arg Pro Gln Met Tyr His Gln Ser Gly Arg Asn Lys Leu
210 215 220
Gly Asn Leu Gln Ala Asp Tyr Asp Ala Leu Gly Val Lys Ala Glu Cys
225 230 235 240
Val Glu Phe Ile Thr Asp Met Val Ser Ala Tyr Arg Asp Ala Asp Leu
245 250 255
Val Ile Cys Arg Ala Gly Ala Leu Thr Ile Ala Glu Leu Thr Ala Ala
260 265 270
Gly Leu Gly Ala Leu Leu Val Pro Tyr Pro His Ala Val Asp Asp His

275 280 285
 Gln Thr Ala Asn Ala Arg Phe Met Val Gln Ala Glu Ala Gly Leu Leu
 290 295 300
 Leu Pro Gln Thr Gln Leu Thr Ala Glu Lys Leu Ala Glu Ile Leu Gly
 305 310 315 320
 Ser Leu Asn Arg Glu Lys Cys Leu Lys Trp Ala Glu Asn Ala Arg Thr
 325 330 335
 Leu Ala Leu Pro His Ser Ala Asp Asp Val Ala Glu Ala Ala Ile Ala
 340 345 350
 Cys Ala Ala
 355

<210> 279
 <211> 1008
 <212> DNA
 <213> Neisseria meningitidis

<400> 279
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 ctggcggtgg cggattcatt gcgcgcgcgc ggccatcatg tgatttggct gggcagcaag 120
 gattcgatgg aagagcggtat cgtgccgcaa tacggcatac gcttggaac gctggcgatt 180
 aaaggcgtgc gcggcaacgg catcaaacgc aaactgatgc tgccggttac tttgtatcaa 240
 accgtccgcg aagcgcagcg gattatccgc aaacaccgtg tcgagtgcgt catcggttc 300
 ggcggttcg ttaccttccc cggcggtttg gcggcgaagc tattargcgt gccgattgtg 360
 attcacgagc aaaacgcgct ggcaggtttg tccaaccgcc acctgtcgcg ctgggcgaag 420
 cgggtgttgt acgcttttcc gaaagcgttc agccacgaag gcggcttggt cggcaacccc 480
 gtccgcgcgc atattagcaa cctgcccggt cctgccgaac gcttccaagg gcgtgaaggc 540
 cgtctgaaaa ttttggtggt cggcggcagt ttgggcgcgg acgttttgaa caaaaccgta 600
 ccgcatgcat tggctttgct gcccgacaat gcgcgtccgc atatgtacca ccaatcgga 660
 cggggcaagc tgggcatctt gcaggcgnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 720
 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nngcgggat tgggtgcgtt gttagtgcg 780
 taccctcacg cggttgacga tcaccaaacc gccaacgcgc gttttatggt gcaggcggag 840
 gcgggattgc tggtgccgca aaccagttg acggcgga aaactcgcca gattctcggc 900
 ggcttaaac gcgaaaaatg cctcaaattg gcagaaaacg cccgtacgtt ggcactgccg 960
 cacagtgcg acgacgtggc ggaagccgcg attgcgtgtg cggcgtaa 1008

<210> 280
 <211> 335
 <212> PRT
 <213> Neisseria meningitidis

<400> 280
 Met Gly Gly Lys Thr Phe Met Leu Xaa Xaa Gly Gly Thr Gly Gly His
 1 5 10 15
 Ile Phe Pro Ala Leu Ala Val Ala Asp Ser Leu Arg Ala Arg Gly His
 20 25 30
 His Val Ile Trp Leu Gly Ser Lys Asp Ser Met Glu Glu Arg Ile Val
 35 40 45

Pro Gln Tyr Gly Ile Arg Leu Glu Thr Leu Ala Ile Lys Gly Val Arg
 50 55 60
 Gly Asn Gly Ile Lys Arg Lys Leu Met Leu Pro Val Thr Leu Tyr Gln
 65 70 75 80
 Thr Val Arg Glu Ala Gln Arg Ile Ile Arg Lys His Arg Val Glu Cys
 85 90 95
 Val Ile Gly Phe Gly Gly Phe Val Thr Phe Pro Gly Gly Leu Ala Ala
 100 105 110
 Lys Leu Leu Xaa Val Pro Ile Val Ile His Glu Gln Asn Ala Val Ala
 115 120 125
 Gly Leu Ser Asn Arg His Leu Ser Arg Trp Ala Lys Arg Val Leu Tyr
 130 135 140
 Ala Phe Pro Lys Ala Phe Ser His Glu Gly Gly Leu Val Gly Asn Pro
 145 150 155 160
 Val Arg Ala Asp Ile Ser Asn Leu Pro Val Pro Ala Glu Arg Phe Gln
 165 170 175
 Gly Arg Glu Gly Arg Leu Lys Ile Leu Val Val Gly Gly Ser Leu Gly
 180 185 190
 Ala Asp Val Leu Asn Lys Thr Val Pro His Ala Leu Ala Leu Leu Pro
 195 200 205
 Asp Asn Ala Arg Pro His Met Tyr His Gln Ser Gly Arg Gly Lys Leu
 210 215 220
 Gly Ile Leu Gln Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 225 230 235 240
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Ala Gly Leu Gly Ala
 245 250 255
 Leu Leu Val Pro Tyr Pro His Ala Val Asp Asp His Gln Thr Ala Asn
 260 265 270
 Ala Arg Phe Met Val Gln Ala Glu Ala Gly Leu Leu Leu Pro Gln Thr
 275 280 285
 Gln Leu Thr Ala Glu Lys Leu Ala Glu Ile Leu Gly Gly Leu Asn Arg
 290 295 300
 Glu Lys Cys Leu Lys Trp Ala Glu Asn Ala Arg Thr Leu Ala Leu Pro
 305 310 315 320
 His Ser Ala Asp Asp Val Ala Glu Ala Ala Ile Ala Cys Ala Ala
 325 330 335

<210> 281

<211> 1068
<212> DNA
<213> *Neisseria meningitidis*

<400> 281
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gattcgatgg aagagcgcac cgtgccgcaa tacgacatcc tgctcgaaac gctggcgatt 180
aaaggcgtgc gcggcaacgg catcaaacgc aagctgatgc tgccgtttac tttgtatcaa 240
actgtccgcg aagcgagca gattatccgc aaacaccgtg tcgagtgcgt catcggttc 300
ggcggcttcg ttacctttcc cggcgggttg gcggcgaagt tattaggcgt gccgattgtg 360
attcacgagc aaaacgccgt ggcagggttg tccaaccgcc acctgtcgcg ctgggcgaag 420
cgggtgttgt acgcttttcc gaaagcgttc agccacgaag gcggcttggc cggcaacccc 480
gtccgcgcgc atattagcaa cctgcccgtg cctgccgaac gtttccaagg gcgtgaaggc 540
cgtctgaaaa ttttggtggt cggcggcagt ttgggcgcgc acgttttgaa caaaaccgta 600
ccgcaggcat tggttttgct gcccagacaat gcgcgtccgc agatgtacca ccaatcgga 660

cggggcaagc tgggcagctt gcaggcggat tacgacgcgc tgggcgtgca agcgggaatgc 720
gtggaattta ttaccgatat ggtgtccgcc taccgcgatg ccgatttggc gatttgccg 780
gccggcgcgc tgacgattgc cgagttgacg gcggcgggat tgggtgcgtt gttagtccg 840
tatactcacg ccgttgatga ccatcaaacc gccaacgcgc gttttatggt gcaggcggag 900
gcgggattgc tgttgccgca aaccagttg acggcggaaa aactcgccga gattctcggc 960
ggcttaaac gcgaaaaatg cctcaaattg gcagaaaacg cccgtacgtt ggcactgccg 1020
cacagtgcgc acgacgttgc cgaagccgcg attgcgtgtg cggcgtaa 1068

<210> 282
<211> 355
<212> PRT
<213> *Neisseria meningitidis*

<400> 282
Met Gly Gly Lys Thr Phe Met Leu Met Ala Gly Gly Thr Gly Gly His
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Ile Phe Pro Ala Leu Ala Val Ala Asp Ser Leu Arg Ala Arg Gly His
20 25 30

His Val Ile Trp Leu Gly Ser Lys Asp Ser Met Glu Glu Arg Ile Val
35 40 45

Pro Gln Tyr Asp Ile Leu Leu Glu Thr Leu Ala Ile Lys Gly Val Arg
50 55 60

Gly Asn Gly Ile Lys Arg Lys Leu Met Leu Pro Phe Thr Leu Tyr Gln
65 70 75 80

Thr Val Arg Glu Ala Gln Gln Ile Ile Arg Lys His Arg Val Glu Cys
85 90 95

Val Ile Gly Phe Gly Gly Phe Val Thr Phe Pro Gly Gly Leu Ala Ala
100 105 110

Lys Leu Leu Gly Val Pro Ile Val Ile His Glu Gln Asn Ala Val Ala
115 120 125

Gly Leu Ser Asn Arg His Leu Ser Arg Trp Ala Lys Arg Val Leu Tyr

130		135		140
Ala Phe Pro Lys Ala Phe Ser His Glu Gly Gly Leu Val Gly Asn Pro				
145		150		155 160
Val Arg Ala Asp Ile Ser Asn Leu Pro Val Pro Ala Glu Arg Phe Gln				
	165		170	175
Gly Arg Glu Gly Arg Leu Lys Ile Leu Val Val Gly Gly Ser Leu Gly				
	180		185	190
Ala Asp Val Leu Asn Lys Thr Val Pro Gln Ala Leu Ala Leu Leu Pro				
	195		200	205
Asp Asn Ala Arg Pro Gln Met Tyr His Gln Ser Gly Arg Gly Lys Leu				
	210		215	220
Gly Ser Leu Gln Ala Asp Tyr Asp Ala Leu Gly Val Gln Ala Glu Cys				
	225		230	235 240
Val Glu Phe Ile Thr Asp Met Val Ser Ala Tyr Arg Asp Ala Asp Leu				
	245		250	255
Val Ile Cys Arg Ala Gly Ala Leu Thr Ile Ala Glu Leu Thr Ala Ala				
	260		265	270
Gly Leu Gly Ala Leu Leu Val Pro Tyr Pro His Ala Val Asp Asp His				
	275		280	285
Gln Thr Ala Asn Ala Arg Phe Met Val Gln Ala Glu Ala Gly Leu Leu				
	290		295	300
Leu Pro Gln Thr Gln Leu Thr Ala Glu Lys Leu Ala Glu Ile Leu Gly				
	305		310	315 320
Gly Leu Asn Arg Glu Lys Cys Leu Lys Trp Ala Glu Asn Ala Arg Thr				
	325		330	335
Leu Ala Leu Pro His Ser Ala Asp Asp Val Ala Glu Ala Ala Ile Ala				
	340		345	350
Cys Ala Ala				
	355			

<210> 283

<211> 1131

<212> DNA

<213> Neisseria gonorrhoeae

<400> 283

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atgttttttat ggctcgacaca tttcagcaac tgggttaaccg gtctgaatat ttttcaatac 60
accacatttcc ggcgcgttat ggcggcggttg accgccttgg cgttttccct gatgttcggc 120
ccgtggacga tacgcaggct gaccgcgctc aaatgcgggc aggcagtgcg taccgacggc 180
ccgcaaacc acctcgtaa aaacggcacg ccgacgatgg gcggttcgct gattctgacc 240
gccattaccg tgtccaccct gttgtggggc aactgggcga acccgatat ctggattctc 300
ttgggcgtac tgcttgccac cgggtgcgctc ggtttttacg acgactggcg caaagtcgtt 360

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tataaagacc ccaacggcgt gtccgcaaaa ttcaaaatgg tgtggcagtc aagcgttgcc 420
gttatcgccg gtttggcatt gttttacctt gccgccaatt ccgccaacaa tattttgatt 480
gtcccgtttt tcaaacaaat cgccttgccg ctgggcgtgg tcggcttttt ggtgttgtct 540
tacctgacca tcgtcggcac atccaacgcc gtcaacctca ccgacggctt ggacggcctt 600
gccgccttcc cgttcgtcct cgttgccgcc gggctcgcca ttttcgccta cgtcagcgga 660
cactaccaat tttcccaata cctccagctt ccctatgtcg ccggcgcgaa cgaagtcgct 720
atattctgca ccgccatgtg cggcgcgctg ctcggaattt tgtggttcaa cgcctatccc 780
gcgcaagtct ttatgggcga tgtcggcgcg ctggcattgg gtgccgcgct cggtagcggt 840
gccgtcatcg tccgccaaga atttgcctc gtcattatgg gcggtctgtt cgtcgtagaa 900
gccgtgtccg ttatgcttca tgtcggctgg tacaagaaaa ccaaaaaacg catcttctctg 960
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cgtttctgga ttattacat cgtcgtggtt ttgatagggt tgagtaccct caaaattcgc 1080
ggaaaactatg ccgtccgaac acctttcaga cggcatttga acgcgcaata a 1131

<210> 284

<211> 376

<212> PRT

<213> Neisseria gonorrhoeae

<400> 284

Met Phe Leu Trp Leu Ala His Phe Ser Asn Trp Leu Thr Gly Leu Asn
1 5 10 15

Ile Phe Gln Tyr Thr Thr Phe Arg Ala Val Met Ala Ala Leu Thr Ala
20 25 30

Leu Ala Phe Ser Leu Met Phe Gly Pro Trp Thr Ile Arg Arg Leu Thr
35 40 45

Ala Leu Lys Cys Gly Gln Ala Val Arg Thr Asp Gly Pro Gln Thr His
50 55 60

Leu Val Lys Asn Gly Thr Pro Thr Met Gly Gly Ser Leu Ile Leu Thr
65 70 75 80

Ala Ile Thr Val Ser Thr Leu Leu Trp Gly Asn Trp Ala Asn Pro Tyr
85 90 95

Ile Trp Ile Leu Leu Gly Val Leu Leu Ala Thr Gly Ala Leu Gly Phe
100 105 110

Tyr Asp Asp Trp Arg Lys Val Val Tyr Lys Asp Pro Asn Gly Val Ser
115 120 125

Ala Lys Phe Lys Met Val Trp Gln Ser Ser Val Ala Val Ile Ala Gly
130 135 140

Leu Ala Leu Phe Tyr Leu Ala Ala Asn Ser Ala Asn Asn Ile Leu Ile
145 150 155 160

Val Pro Phe Phe Lys Gln Ile Ala Leu Pro Leu Gly Val Val Gly Phe
165 170 175

Leu Val Leu Ser Tyr Leu Thr Ile Val Gly Thr Ser Asn Ala Val Asn
180 185 190

Leu Thr Asp Gly Leu Asp Gly Leu Ala Ala Phe Pro Phe Val Leu Val
 195 200 205
 Ala Ala Gly Leu Ala Ile Phe Ala Tyr Val Ser Gly His Tyr Gln Phe
 210 215 220
 Ser Gln Tyr Leu Gln Leu Pro Tyr Val Ala Gly Ala Asn Glu Val Ala
 225 230 235 240
 Ile Phe Cys Thr Ala Met Cys Gly Ala Cys Leu Gly Phe Leu Trp Phe
 245 250 255
 Asn Ala Tyr Pro Ala Gln Val Phe Met Gly Asp Val Gly Ala Leu Ala
 260 265 270
 Leu Gly Ala Ala Leu Gly Thr Val Ala Val Ile Val Arg Gln Glu Phe
 275 280 285
 Val Leu Val Ile Met Gly Gly Leu Phe Val Val Glu Ala Val Ser Val
 290 295 300
 Met Leu His Val Gly Trp Tyr Lys Lys Thr Lys Lys Arg Ile Phe Leu
 305 310 315 320
 Thr Ala Pro Ile His His His Tyr Gln Leu Arg Cys Trp Lys Glu Thr
 325 330 335
 Gln Val Val Val Arg Phe Trp Ile Ile Thr Ile Val Val Val Leu Ile
 340 345 350
 Gly Leu Ser Thr Leu Lys Ile Arg Gly Asn Tyr Ala Val Arg Thr Pro
 355 360 365
 Phe Arg Arg His Leu Asn Ala Gln
 370 375

<210> 285

<211> 1131

<212> DNA

<213> Neisseria meningitidis

<400> 285

atgtttttat ggctcgacaca tttcagcanc tggttaaccg gtctgaatnn nnnnnnnnnn 60
 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 120
 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 180
 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 240
 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 300
 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 360
 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 420
 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 480
 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnggcgtgg tcggcttttt ggtgttgtct 540
 tacctgacca tcgtcggcac atccaatgcc gtcaacctca ccgacggcctt ggacggcctt 600
 gcgaccttcc ccgtcgtcct cgttgccgcc gccctcgcca tcttcgccta tgccagcggc 660
 cactcacaat ttgcccaata cctgcaatta ccttacgttg ccggcgcaaa cgaagtgggtg 720
 attttctgta ccgccatgtg ccggcgcgtgc ctcgggtttct tgtggtttta cgcctatccc 780
 gcgcaagtct ttatgggcga tgtcgggtgca ttggcattgg gtgccgcgct cggtagcgtc 840


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gccgttatcg tccgccaaga gtttgctctc gtcattatgg gccgattatt tgtcgtagaa 900
gccgtatccg ttatgcttca ggttggctgg tataagaaaa ccaaaaaacg catcttcctg 960
atggcgccca tccatcacca ctacgaacaa aaaggctgga aagaaacca agtcgtcgtc 1020
cgcttttgga ttattaccat cgtcttggtg ttgatcgggt tgagtaccct caaaatccgc 1080
tgaacctatg ccgtctgaac atctttcaga cggcatttga acgcgcaata a 1131

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<210> 286

<211> 376

<212> PRT

<213> Neisseria meningitidis

<400> 286

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Met Phe Leu Trp Leu Ala His Phe Ser Asn Trp Leu Thr Gly Leu Asn
  1             5             10             15

Ile Phe Gln Tyr Thr Thr Phe Arg Ala Val Met Ala Ala Leu Thr Ala
      20             25             30

Leu Ala Phe Ser Leu Met Phe Gly Pro Trp Thr Ile Arg Arg Leu Thr
      35             40             45

Ala Leu Lys Cys Gly Gln Ala Val Arg Thr Asp Gly Pro Gln Thr His
      50             55             60

Leu Val Lys Asn Gly Thr Pro Thr Met Gly Gly Ser Leu Ile Leu Thr
      65             70             75             80

Ala Ile Thr Val Ser Thr Leu Leu Trp Gly Asn Trp Ala Asn Pro Tyr
      85             90             95

Ile Trp Ile Leu Leu Gly Val Leu Leu Ala Thr Gly Ala Leu Gly Phe
      100            105            110

Tyr Asp Asp Trp Arg Lys Val Val Tyr Lys Asp Pro Asn Gly Val Ser
      115            120            125

Ala Lys Phe Lys Met Val Trp Gln Ser Ser Val Ala Val Ile Ala Gly
      130            135            140

Leu Ala Leu Phe Tyr Leu Ala Ala Asn Ser Ala Asn Asn Ile Leu Ile
      145            150            155            160

Val Pro Phe Phe Lys Gln Ile Ala Leu Pro Leu Gly Val Val Gly Phe
      165            170            175

Leu Val Leu Ser Tyr Leu Thr Ile Val Gly Thr Ser Asn Ala Val Asn
      180            185            190

Leu Thr Asp Gly Leu Asp Gly Leu Ala Thr Phe Pro Val Val Leu Val
      195            200            205

Ala Ala Gly Leu Ala Ile Phe Ala Tyr Ala Ser Gly His Ser Gln Phe
      210            215            220

Ala Gln Tyr Leu Gln Leu Pro Tyr Val Ala Gly Ala Asn Glu Val Val
      225            230            235            240

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<211> 374
<212> PRT
<213> Neisseria meningitidis

<400> 288

Met Phe Leu Trp Leu Ala His Phe Ser Asn Trp Leu Thr Gly Leu Asn
1 5 10 15
Ile Phe Gln Tyr Thr Thr Phe Arg Ala Val Met Ala Ala Leu Thr Ala
20 25 30
Leu Ala Phe Ser Leu Met Phe Gly Pro Trp Thr Ile Arg Arg Leu Thr
35 40 45
Ala Leu Lys Cys Gly Gln Ala Val Arg Thr Asp Gly Pro Gln Thr His
50 55 60
Leu Val Lys Asn Gly Thr Pro Thr Met Gly Gly Ser Leu Ile Leu Thr
65 70 75 80
Ala Ile Thr Val Ser Thr Leu Leu Trp Gly Asn Trp Ala Asn Pro Tyr
85 90 95
Ile Trp Ile Leu Leu Gly Val Leu Leu Ala Thr Gly Ala Leu Gly Phe
100 105 110
Tyr Asp Asp Trp Arg Lys Val Val Tyr Lys Asp Pro Asn Gly Val Ser
115 120 125
Ala Lys Phe Lys Met Val Trp Gln Ser Ser Val Ala Ile Ile Ala Gly
130 135 140
Leu Ala Leu Phe Tyr Leu Ala Ala Asn Ser Ala Asn Asn Ile Leu Ile
145 150 155 160
Val Pro Phe Phe Lys Gln Ile Ala Leu Pro Leu Gly Val Val Gly Phe
165 170 175
Leu Val Leu Ser Tyr Leu Thr Ile Val Gly Thr Ser Asn Ala Val Asn
180 185 190
Leu Thr Asp Gly Leu Asp Gly Leu Ala Thr Phe Pro Val Val Leu Val
195 200 205
Ala Ala Gly Leu Ala Ile Phe Ala Tyr Ala Ser Gly His Ser Gln Phe
210 215 220
Ala Gln Tyr Leu Gln Leu Pro Tyr Val Ala Gly Ala Asn Glu Val Val
225 230 235 240
Ile Phe Cys Thr Ala Met Cys Gly Ala Cys Leu Gly Phe Leu Trp Phe
245 250 255
Asn Ala Tyr Pro Ala Gln Val Phe Met Gly Asp Val Gly Ala Leu Ala
260 265 270
Leu Gly Ala Ala Leu Gly Thr Val Ala Val Ile Val Arg Gln Glu Phe

275 280 285
 Val Leu Val Ile Met Gly Gly Leu Phe Val Val Glu Ala Val Ser Val
 290 295 300
 Met Leu Gln Val Gly Trp Tyr Lys Lys Thr Lys Lys Arg Ile Phe Leu
 305 310 315 320
 Met Ala Pro Ile His His His Tyr Glu Gln Lys Gly Trp Lys Glu Thr
 325 330 335
 Gln Val Val Val Arg Phe Trp Ile Ile Thr Ile Val Leu Val Leu Ile
 340 345 350
 Gly Leu Ser Thr Leu Lys Ile Arg Thr Tyr Ala Val Thr Pro Phe Arg
 355 360 365
 Arg His Leu Asn Ala Gln
 370

<210> 289
 <211> 450
 <212> DNA
 <213> *Neisseria gonorrhoeae*

<400> 289
 atgccgccca aaatcacgaa gagcggggttt tgcaaaccgg caatcgcggc ggcggtcgcg 60
 ccgacattcg tgccttttgc tgcgtcgatg aataccacgc cgtttttctc gccgattttt 120
 tccacacggt gcggcaagcc ttggaaggtt ttgacgtgtt ccagcaatgc ttgcgcgggc 180
 aaaccgacgg cctcgacaaa agccacggca gccataacgt tggcggcggt gtgcaaacct 240
 tgcagcggga tgtcttgcgt agaaatcaaa tcttcattgc cttgttttaa acagcccgtc 300
 ccgcgttcca accaaaaatc ggcttcgtgt tccaaggaaa accgtttcac ttcacgccct 360
 gcccgtttca tggcgcggca gaacacgtcg tccgcattca aaacctgcac tccatcgcca 420
 cggaaaaatct cggcttttgg atgcgcgtag 450

<210> 290
 <211> 149
 <212> PRT
 <213> *Neisseria gonorrhoeae*

<400> 290
 Met Pro Pro Lys Ile Thr Lys Ser Gly Phe Cys Lys Pro Ala Ile Ala
 1 5 10 15
 Ala Ala Val Ala Pro Thr Phe Val Pro Leu Leu Ser Ser Met Asn Thr
 20 25 30
 Thr Pro Phe Phe Ser Pro Ile Phe Ser Thr Arg Cys Gly Lys Pro Trp
 35 40 45
 Lys Val Leu Thr Cys Ser Ser Asn Ala Ser Arg Gly Lys Pro Thr Ala
 50 55 60
 Ser His Lys Ala Thr Ala Ala Ile Thr Leu Ala Ala Leu Cys Lys Pro
 65 70 75 80

Cys Ser Gly Met Ser Cys Val Glu Ile Lys Ser Ser Leu Pro Cys Phe
85 90 95

Lys Gln Pro Val Pro Arg Ser Asn Gln Lys Ser Ala Ser Cys Ser Lys
100 105 110

Glu Asn Arg Phe Thr Ser Arg Pro Ala Arg Phe Met Ala Arg Gln Asn
115 120 125

Thr Ser Ser Ala Phe Lys Thr Cys Thr Pro Ser Pro Arg Lys Ile Ser
130 135 140

Ala Leu Val Cys Ala
145

<210> 291

<211> 450

<212> DNA

<213> Neisseria meningitidis

<400> 291

atgccgccca aaatcackaw gagcggattt tgcaaaccgg caatcgcggc ggcatgctcg 60
ccgacattcg tgcctttgct gtcgtcgata aacaccacgc cgtttttctc gccgattttt 120
tccacgcggt gcggcaggcc ttggaagggt ttgacgtggt cgagcaatgc ttcgcgcgac 180
aaaccgatgg cctcacacaa agccackgca gccatgacgt tagcggcggt gtgcakacct 240
tgcaacggwa tgtcttgctg gacaatcaaa ttttcattgc cttgtttcag gcggcctgtc 300
tcgcgttcca accagaaatc agcttcgtgt tccaacgaaa accattttac ctcgcgcccc 360
gcacgcttca tcgcgcggca gaacgcatcg tccgcattca aaacctgcac gccgtcgcca 420
cggaaaatct tggctttggt atgcgcatag 450

<210> 292

<211> 149

<212> PRT

<213> Neisseria meningitidis

<400> 292

Met Pro Pro Lys Ile Thr Xaa Ser Gly Phe Cys Lys Pro Ala Ile Ala
1 5 10 15

Ala Ala Val Ala Pro Thr Phe Val Pro Leu Leu Ser Ser Ile Asn Thr
20 25 30

Thr Pro Phe Phe Ser Pro Ile Phe Ser Thr Arg Cys Gly Arg Pro Trp
35 40 45

Lys Val Leu Thr Cys Ser Ser Asn Ala Ser Arg Asp Lys Pro Met Ala
50 55 60

Ser His Lys Ala Thr Ala Ala Met Thr Leu Ala Ala Leu Cys Xaa Pro
65 70 75 80

Cys Asn Gly Met Ser Cys Val Thr Ile Lys Ser Ser Leu Pro Cys Phe
85 90 95

Arg Arg Pro Val Ser Arg Ser Asn Gln Lys Ser Ala Ser Cys Ser Asn
100 105 110

Glu Asn His Phe Thr Ser Arg Pro Ala Arg Phe Ile Ala Arg Gln Asn
115 120 125

Ala Ser Ser Ala Phe Lys Thr Cys Thr Pro Ser Pro Arg Lys Ile Leu
130 135 140

Ala Leu Val Cys Ala
145

<210> 293

<211> 450

<212> DNA

<213> Neisseria meningitidis

<400> 293

atgccgccta aaatcacgaa gagcggattt tgcaaacccg caatcgcggc ggcggtcgca 60
ccgacgttcg tgcctttgct gtcgtcgatg aacaccacgc catTTTTtctc gccgattttt 120
tccacgcggt gcggcaggcc ttgaaagggt ttgacgtggt cgagcaatgc ttcgcgcggc 180
aaaccgacgg cttcgacaaa ggcaacggca gccatcacgt tagtggcggt gtgcaagcct 240
tgcagcggaa tatcttgctg ggcaatcaaa tcttcattgc cttgtttcag gcgacctgtc 300
tcacgttcca accaaaaatc ggcttcgtat tccaacgaaa accatttcac ctgcgccccg 360
gcgcgcttca tcgcacgaca gaacgcacgc tccgcattca aaacctgcac accgtcgcca 420
cggaaaaatct tggctttggt atgcgcgtag 450

<210> 294

<211> 148

<212> PRT

<213> Neisseria meningitidis

<400> 294

Met Pro Pro Lys Ile Thr Lys Ser Gly Phe Cys Lys Pro Ala Ile Ala
1 5 10 15

Ala Ala Val Ala Pro Thr Phe Val Pro Leu Leu Ser Ser Met Asn Thr
20 25 30

Thr Pro Phe Phe Ser Pro Ile Phe Ser Thr Arg Cys Gly Arg Pro Lys
35 40 45

Val Leu Thr Cys Ser Ser Asn Ala Ser Arg Gly Lys Pro Thr Ala Ser
50 55 60

His Lys Ala Thr Ala Ala Ile Thr Leu Val Ala Leu Cys Lys Pro Cys
65 70 75 80

Ser Gly Ile Ser Cys Val Ala Ile Lys Ser Ser Leu Pro Cys Phe Arg
85 90 95

Arg Pro Val Ser Arg Ser Asn Gln Lys Ser Ala Ser Tyr Ser Asn Glu
100 105 110

Asn His Phe Thr Ser Arg Pro Ala Arg Phe Ile Ala Arg Gln Asn Ala

115

120

125

Ser Ser Ala Phe Lys Thr Cys Thr Pro Ser Pro Arg Lys Ile Leu Ala
 130 135 140

Leu Val Cys Ala
 145

<210> 295

<211> 356

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 295

atgcgcgtag tcgagcaaat cgtcgtagcg gtcgagatgg tcttcggaaa tgttcacac 60
 cgtcgccgca gtcgggcgca ggctttcggg gttttccagt tggaagctgg aaagctcca 120
 caccacacg tccgcctttt tgccttcgcg ctgcaattct gcctccaaga cgggcgtacc 180
 gatattgcc gcaatgacgg tatccagccc gcacttgatg cagagatagc ggaccaggct 240
 ggttaccgtg gttttgccgt tgcgtccggg aatcgcaatc accttgtcgc cgcggcgggt 300
 cacaatgtcc gccagcaatt ggatgtcgcc tagcacgcgc ccgccgtttt gcttga 356

<210> 296

<211> 118

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 296

Met Arg Val Val Glu Gln Ile Val Val Ala Val Glu Met Val Phe Gly
 1 5 10 15

Asn Val His His Arg Arg Arg Ser Arg Ala Gln Ala Phe Gly Val Phe
 20 25 30

Gln Leu Glu Ala Gly Lys Leu Pro His Pro His Val Arg Leu Phe Ala
 35 40 45

Phe Ala Leu Gln Phe Cys Leu Gln Asp Gly Arg Thr Asp Ile Ala Arg
 50 55 60

Asn Asp Gly Ile Gln Pro Ala Leu Asp Ala Glu Ile Ala Asp Gln Ala
 65 70 75 80

Gly Tyr Arg Gly Phe Ala Val Ala Ala Gly Asn Arg Asn His Leu Val
 85 90 95

Ala Ala Ala Val His Asn Val Arg Gln Gln Leu Asp Val Ala Xaa His
 100 105 110

Ala Xaa Arg Arg Phe Ala
 115

<210> 297

<211> 356

<212> DNA

<213> Neisseria meningitidis

<400> 297

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atgcgcata gtcgagcaagt cgtcgttagcg gtcgagatgg tcttcggaaa tgttcagcac 60
cgtcgccgca gtcggacgca ggcttttcggt gttttccagt tggagctgg aaagctccaa 120
caccacacg tccgcctttt tgccttcgcg ctgccattcc gcctccaaaa ccggcggtgcc 180
gatattgccc gcgataacgg tatccagccc gcacttgata cagagatagc cgaccaggct 240
cgttaccgtg gttttgccgt tgctgccggt aatcgcaatt accttgctgc cccggcggtt 300
cacaatgtcc gccagcaatt cgatgtcgcc caacacgcgt ccgccgtttt gcttga 356
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<210> 298

<211> 118

<212> PRT

<213> Neisseria meningitidis

<400> 298

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Met Arg Ile Val Glu Gln Val Val Val Ala Val Glu Met Val Phe Gly
  1             5             10             15

Asn Val Gln His Arg Arg Arg Ser Arg Thr Gln Ala Phe Gly Val Phe
      20             25             30

Gln Leu Glu Ala Gly Lys Leu Gln His Pro His Val Arg Leu Phe Ala
    35             40             45

Phe Ala Leu Pro Phe Arg Leu Gln Asn Arg Arg Ala Asp Ile Ala Arg
    50             55             60

Asp Asn Gly Ile Gln Pro Ala Leu Asp Thr Glu Ile Ala Asp Gln Ala
    65             70             75             80

Arg Tyr Arg Gly Phe Ala Val Ala Ala Gly Asn Arg Asn Tyr Leu Val
      85             90             95

Val Pro Ala Val His Asn Val Arg Gln Gln Phe Asp Val Ala Gln His
    100            105            110

Ala Xaa Arg Arg Phe Ala
    115
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<210> 299

<211> 356

<212> DNA

<213> Neisseria meningitidis

<400> 299

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atgcgcgtag tgcagcaagt cgtcgttagcg gtcgagatgg tcttcggaaa tgttcagcac 60
tgtcgccgca gtcgggacgca ggcttttcggt gttttccagt tggaaactgg aaagctccaa 120
caccacacg tccgcctttt tgccttcgcg ctgcaattcc gcctccaaaa ccggcgcgcc 180
gatattgccc gcgataacgg tatccagccc acacttgatg cagagatagc cgaccaggct 240
cgttaccgtg gttttgccgt tgctgccggt aatcgcaatc accttgctgc cgcggcggtt 300
cacaatgtcc gccagcaatt cgatgtcgcc caacacgcgt ccgccgtttc gcttaa 356
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<210> 300

<211> 118
 <212> PRT
 <213> Neisseria meningitidis

<400> 300

Met	Arg	Val	Val	Glu	Gln	Val	Val	Val	Ala	Val	Glu	Met	Val	Phe	Gly
1				5					10					15	
Asn	Val	Gln	His	Cys	Arg	Arg	Ser	Arg	Ala	Gln	Ala	Phe	Gly	Val	Phe
			20					25					30		
Gln	Leu	Glu	Thr	Gly	Lys	Leu	Gln	His	Pro	His	Val	Arg	Leu	Phe	Ala
		35					40					45			
Phe	Ala	Leu	Gln	Phe	Arg	Leu	Gln	Asn	Arg	Arg	Ala	Asp	Ile	Ala	Arg
	50					55					60				
Asp	Asn	Gly	Ile	Gln	Pro	Thr	Leu	Asp	Ala	Glu	Ile	Ala	Asp	Gln	Ala
65					70					75				80	
Arg	Tyr	Arg	Gly	Phe	Ala	Val	Ala	Ala	Gly	Asn	Arg	Asn	His	Leu	Val
			85						90					95	
Ala	Ala	Ala	Val	His	Asn	Val	Arg	Gln	Gln	Phe	Asp	Val	Ala	Gln	His
			100					105						110	
Ala	Xaa	Arg	Arg	Phe	Ala										
			115												

<210> 301
 <211> 1380
 <212> DNA
 <213> Neisseria meningitidis

<400> 301

atgacggcgt	ttgcatttca	gacggcatca	caaagcctta	aacgcttcga	taaacacttc	60
cgaacgggtg	gcgtagcctt	tgaacatatc	aaagctcgcg	caggcggggc	tgagcaaacac	120
aatatcgcc	gcttcggcct	gggcatatgc	cgtctgaacg	gcttctccca	aagtggcgca	180
gtcggtcata	ttcaagccgc	agccgtccaa	atcgcgggcg	atttgcggcg	catcgacacc	240
aatcaagaac	acgccttttg	ccttgccctac	cagtgcateg	cgagggggcg	tgaagtcctg	300
ccctttacc	atgcgcgcca	aaatcacgaa	gagcggattt	tgcaaaccgg	caatcgcggc	360
ggcagtcg	cgacattcg	tgcttttgct	gtcgctcgata	aacaccacgc	cgtttttctc	420
gccgattttt	tccacgcggg	gcggcaggcc	ttggaagggt	ttgacgtggt	cgagcaatgc	480
ttcgcgcgac	aaaccgatgg	cctcacacaa	agccacggca	gccatgacgt	tagcggcggt	540
gtgcagacct	tgcaacggaa	tgtcttgctg	gacaatcaaa	tcttcattgc	cttgtttcag	600
gcggcctgtc	tcgcgttcca	accagaaatc	agcttcgtgt	tccaacgaaa	accattttac	660
ctcgcgcccg	gcacgcttca	tcgcgcggca	gaacgcateg	tccgcattca	aaacctgcac	720
gccgtcgcca	cggaaaatct	tggctttggt	atgcgcatag	tcgagcaagt	cgtcgtagcg	780
gtcgagatgg	tcttcggaaa	tgttcagcac	cgtcgccgca	gtcggacgca	ggctttcggt	840
gttttccagt	tggaagctgg	aaagctccaa	caccacacag	tccgcctttt	tgcttcgcg	900
ctgccattcc	gcctccaaaa	ccggcgtgcc	gatattgccc	gcgataacgg	tatccagccc	960
gcacttgata	cagagatagc	cgaccaggct	cgttaccgtg	gttttgccgt	tgctgcccgt	1020
aatcgcaatt	acctgtgcgt	cccggcggtt	cacaatgtcc	gccagcaatt	cgatgtcgcc	1080
caacacgcgt	ccgcggtttt	gcttgaacgc	ctcaatatcc	ggctgcccgt	cgctgatgcc	1140
gggactgaga	gccagaatat	cgaaaccggt	gtccagcgca	tctttcagac	ggcccgtgta	1200
aaacaccaac	ccgtcaaaca	tcttaccgat	ttgcgacacg	cgttccggct	tcagctccgc	1260

atcatacgca gcaacctccg cgccgttttt gcgcaggtag gcaatcatgg aaataccggt 1320
 accgccgagt ccggcgacga ggattttttt gttttgaaaa gtcattttgg tttgtcctaa 1380

<210> 302

<211> 459

<212> PRT

<213> Neisseria meningitidis

<400> 302

Met Thr Ala Phe Ala Phe Gln Thr Ala Ser Gln Ser Leu Lys Arg Phe
 1 5 10 15

Asp Lys His Phe Arg Thr Val Arg Val Ala Phe Glu His Ile Lys Ala
 20 25 30

Arg Ala Gly Gly Ala Glu Gln His Asn Ile Ala Cys Phe Gly Leu Gly
 35 40 45

Ile Cys Arg Leu Asn Gly Phe Ser Gln Ser Gly Ala Val Gly His Ile
 50 55 60

Gln Ala Ala Ala Val Gln Ile Ala Ala Asp Leu Arg Arg Ile Asp Thr
 65 70 75 80

Asn Gln Glu His Ala Phe Cys Leu Ala Tyr Gln Cys Ile Ala Gln Gly
 85 90 95

Arg Glu Val Leu Pro Phe Thr His Ala Ala Gln Asn His Glu Glu Arg
 100 105 110

Ile Leu Gln Thr Gly Asn Arg Gly Gly Ser Arg Ala Asp Ile Arg Ala
 115 120 125

Phe Ala Val Val Asp Lys His His Ala Val Phe Leu Ala Asp Phe Phe
 130 135 140

His Ala Val Arg Gln Ala Leu Glu Gly Phe Asp Val Phe Glu Gln Cys
 145 150 155 160

Phe Ala Arg Gln Thr Asp Gly Leu Thr Gln Ser His Gly Ser His Asp
 165 170 175

Val Ser Gly Val Val Gln Thr Leu Gln Arg Asn Val Leu Arg Asp Asn
 180 185 190

Gln Ile Phe Ile Ala Leu Phe Gln Ala Ala Cys Leu Ala Phe Gln Pro
 195 200 205

Glu Ile Ser Phe Val Phe Gln Arg Lys Pro Phe Tyr Leu Ala Pro Gly
 210 215 220

Thr Leu His Arg Ala Ala Glu Arg Ile Val Arg Ile Gln Asn Leu His
 225 230 235 240

Ala Val Ala Thr Glu Asn Leu Gly Phe Gly Met Arg Ile Val Glu Gln
 245 250 255

Val Val Val Ala Val Glu Met Val Phe Gly Asn Val Gln His Arg Arg
 260 265 270
 Arg Ser Arg Thr Gln Ala Phe Gly Val Phe Gln Leu Glu Ala Gly Lys
 275 280 285
 Leu Gln His Pro His Val Arg Leu Phe Ala Phe Ala Leu Pro Phe Arg
 290 295 300
 Leu Gln Asn Arg Arg Ala Asp Ile Ala Arg Asp Asn Gly Ile Gln Pro
 305 310 315 320
 Ala Leu Asp Thr Glu Ile Ala Asp Gln Ala Arg Tyr Arg Gly Phe Ala
 325 330 335
 Val Ala Ala Gly Asn Arg Asn Tyr Leu Val Val Pro Ala Val His Asn
 340 345 350
 Val Arg Gln Gln Phe Asp Val Ala Gln His Ala Ser Ala Val Leu Leu
 355 360 365
 Glu Arg Leu Asn Ile Arg Leu Pro Leu Ala Asp Ala Gly Thr Glu Ser
 370 375 380
 Gln Asn Ile Glu Thr Val Val Gln Arg Ile Phe Gln Thr Ala Arg Val
 385 390 395 400
 Lys His Gln Pro Val Lys His Leu Thr Asp Leu Arg His Ala Phe Arg
 405 410 415
 Leu Gln Leu Arg Ile Ile Arg Ser Asn Leu Arg Ala Val Phe Ala Gln
 420 425 430
 Val Gly Asn His Gly Asn Thr Arg Thr Ala Glu Ser Gly Asp Glu Asp
 435 440 445
 Phe Phe Val Leu Lys Ser His Phe Gly Leu Ser
 450 455

<210> 303
 <211> 309
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 303
 atggaaatac ccgtgccgcc aagtcggcg acgaggattt ttttgttga aagtcatttt 60
 ggttttgtcc taaaacaaat catattgggc aggagacgtc cgcccttgcc caagccgctt 120
 tcagacggca tcgcgagccg attaataacc cgccttcagg cgttgggtcat tgtcgcagct 180
 gttttggtct ccgttttgac aagccttgcc aagccattgt tgagcgagcg caaggtcttg 240
 gcgcacgccg cgtccatcgt aatacatcaa gcccaaattg tattgggctt gggcatcccc 300
 ttgttctga 309

<210> 304
 <211> 102

<212> PRT
<213> Neisseria gonorrhoeae

<400> 304

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Met Glu Ile Pro Val Pro Pro Ser Pro Ala Thr Arg Ile Phe Leu Phe
  1             5             10             15

Glu Ser His Phe Gly Phe Val Leu Lys Gln Ile Ile Leu Gly Arg Arg
          20             25             30

Arg Pro Pro Leu Pro Lys Pro Leu Ser Asp Gly Ile Ala Ser Arg Leu
          35             40             45

Ile Thr Arg Leu Gln Ala Leu Val Ile Val Ala Ala Val Leu Val Ser
          50             55             60

Val Leu Thr Ser Leu Ala Lys Pro Leu Leu Ser Glu Arg Lys Val Leu
          65             70             75             80

Ala His Ala Ala Ser Ile Val Ile His Gln Ala Gln Ile Val Leu Gly
          85             90             95

Leu Gly Ile Pro Leu Phe
          100
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<210> 305
<211> 306
<212> DNA
<213> Neisseria meningitidis

<400> 305

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tggtttgtcc taaaacaaat catattgagc aggagatgtc cgcccctgcc caagccgctt 120
tcagacggca tcgcgagctg ttcaataacc cgccttcagg cgttggtcat tgtcgagcc 180
gtcttgggtc ccgttttgac aagccttgcc aaaccattct tgtgcaaggg cgcgggtctt 240
gcgcacgccg cgtctttcgg catacatcac gcccaaattg ttttgggctt gggctacccc 300
ctgcgc                                           306
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<210> 306
<211> 102
<212> PRT
<213> Neisseria meningitidis

<400> 306

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Met Glu Ile Pro Val Pro Pro Ser Pro Ala Thr Arg Ile Phe Leu Phe
  1             5             10             15

Glu Lys Ser Phe Trp Phe Val Leu Lys Gln Ile Ile Leu Ser Arg Arg
          20             25             30

Cys Pro Pro Leu Pro Lys Pro Leu Ser Asp Gly Ile Ala Ser Cys Ser
          35             40             45

Ile Thr Arg Leu Gln Ala Leu Val Ile Val Ala Ala Val Leu Val Ser
          50             55             60
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Val Leu Thr Ser Leu Ala Lys Pro Phe Leu Cys Lys Gly Ala Val Leu
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Ala His Ala Ala Ser Phe Gly Ile His His Ala Gln Ile Val Leu Gly
85 90 95

Leu Gly Tyr Pro Leu Arg
100

<210> 307
<211> 288
<212> DNA
<213> Neisseria meningitidis

<400> 307
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tcagacggca tcgcgagctg ttcaataacc cgctttcagg cgttgggtcat tgtcgcagct 180
gtcttggtat ccgttttgac aagccttgcc aagccattct tgtgcaaggg cgcggtcttg 240
gcgcacgccg cgtctttcgg catacatcac gcccaaattg ttttgggc 288

<210> 308
<211> 96
<212> PRT
<213> Neisseria meningitidis

<400> 308
Met Glu Ile Pro Val Pro Pro Ser Pro Ala Thr Arg Ile Phe Leu Phe
1 5 10 15

Trp Lys Ser Phe Trp Phe Val Leu Lys Gln Ile Ile Leu Ser Arg Gly
20 25 30

Cys Leu Ile Leu Leu Lys Pro Leu Ser Asp Gly Ile Ala Ser Cys Ser
35 40 45

Ile Thr Arg Phe Gln Ala Leu Val Ile Val Ala Ala Val Leu Val Ser
50 55 60

Val Leu Thr Ser Leu Ala Lys Pro Phe Leu Cys Lys Gly Ala Val Leu
65 70 75 80

Ala His Ala Ala Ser Phe Gly Ile His His Ala Gln Ile Val Leu Gly
85 90 95

<210> 309
<211> 1521
<212> DNA
<213> Neisseria gonorrhoeae

<400> 309

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aatcgagtaa gcaacatcca ttttgtcgg atcggcgggc tcggcatgag cggtatcgcc 180
gaagtcttgc acaatttggg ctttaaagtt tccggttcgg atcaggcgcg aaatgccgct 240
accgagcatt tgagcagcct gggcattcaa gtttatcccg gccataccgc agaacacggt 300
aacggtgcg atgtcgtcgt tgcctctacc gccgtcaaga aagaaaatcc cgaagtgtgc 360
gctgcgttgg agcggcaaat tcccgttatt ccgcgcgct tgatgctggc agagctgatg 420
cgcttccgtg acggcatcgc cattgccgg acgcacggca aaaccacgac caccagcctg 480
accgcctcca tctcggcgc ggcaggactc gacccactt tcgttatcgg cggcaaactc 540
aacgccgag gcaccaacgc ccgcttgggc aaaggcgaat acatcgttgc cgaagccgac 600
gaatccgatg cctctttcct acatctgacc ccgattatgt ccgtcgttac caatatcgac 660
gaagaccata tggataccta cgggcacagc gtcgaaaaac tgcatacaggc gtttatcgat 720
ttcatccacc gtatgccctt ctacggcaaa gcctttttgt gtgttgacag cgaacacgtc 780
cgcgcgattt tgcccaaagt gagcaaacct tatgctactt acggttttga cgataccgcc 840
gacatctacg ccaccgacat cgaaaacgtc ggcgcgcaaa tgaaattcac cgtccatgtt 900
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gacatcaagt tgccaaacgg cgggaccgct ttgtggttgg acgattacgg acaccacccc 1140
gtcgaaatgg cggcaaccct tgccgctgca cgcgcgcg atccggaaaa acgtttggtg 1200
ctcgcttcc agccgcaccg ctataccgc acgcgcgatt tgtttgaaga ctttaccaaa 1260
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gttgccgcgc ccgactcccg cgccttggcg cgtgctatcc gcgtattggg caaacttgag 1380
ccgatttact gcgaaaatgt cgccgacctg ccgcaaatgc tgatgaatgt tttacaggat 1440
ggcgatgttg tgttgaatat ggggtcgggg agcatcaacc gcgttccttc cgcgctgttg 1500
gaattgtcga aacagatttg a 1521
```

<210> 310

<211> 506

<212> PRT

<213> Neisseria gonorrhoeae

<400> 310

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Met Phe Phe Ile Ser Ile Arg Tyr Ile Phe Val Arg Lys Leu Trp Cys
  1                      5                      10                      15

Ala Asn Gly Gln Thr Phe Lys Ile Thr Pro Leu Arg Thr Lys Asn Gln
      20                      25                      30

Pro Glu Arg Asn Ile Met Met Lys Asn Arg Val Ser Asn Ile His Phe
      35                      40                      45

Val Gly Ile Gly Gly Val Gly Met Ser Gly Ile Ala Glu Val Leu His
      50                      55                      60

Asn Leu Gly Phe Lys Val Ser Gly Ser Asp Gln Ala Arg Asn Ala Ala
      65                      70                      75                      80

Thr Glu His Leu Ser Ser Leu Gly Ile Gln Val Tyr Pro Gly His Thr
      85                      90                      95

Ala Glu His Val Asn Gly Ala Asp Val Val Val Ala Ser Thr Ala Val
      100                     105                     110

Lys Lys Glu Asn Pro Glu Val Val Ala Ala Leu Glu Arg Gln Ile Pro
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115	120	125
Val Ile Pro Arg Ala Leu Met Leu Ala Glu Leu Met Arg Phe Arg Asp 130 135 140		
Gly Ile Ala Ile Ala Gly Thr His Gly Lys Thr Thr Thr Thr Ser Leu 145 150 155 160		
Thr Ala Ser Ile Leu Gly Ala Ala Gly Leu Asp Pro Thr Phe Val Ile 165 170 175		
Gly Gly Lys Leu Asn Ala Ala Gly Thr Asn Ala Arg Leu Gly Lys Gly 180 185 190		
Glu Tyr Ile Val Ala Glu Ala Asp Glu Ser Asp Ala Ser Phe Leu His 195 200 205		
Leu Thr Pro Ile Met Ser Val Val Thr Asn Ile Asp Glu Asp His Met 210 215 220		
Asp Thr Tyr Gly His Ser Val Glu Lys Leu His Gln Ala Phe Ile Asp 225 230 235 240		
Phe Ile His Arg Met Pro Phe Tyr Gly Lys Ala Phe Leu Cys Val Asp 245 250 255		
Ser Glu His Val Arg Ala Ile Leu Pro Lys Val Ser Lys Pro Tyr Ala 260 265 270		
Thr Tyr Gly Leu Asp Asp Thr Ala Asp Ile Tyr Ala Thr Asp Ile Glu 275 280 285		
Asn Val Gly Ala Gln Met Lys Phe Thr Val His Val Gln Met Lys Gly 290 295 300		
His Glu Gln Gly Ser Phe Glu Val Val Leu Asn Met Pro Gly Arg His 305 310 315 320		
Asn Val Leu Asn Ala Leu Ala Ala Ile Gly Val Ala Leu Glu Val Gly 325 330 335		
Ala Ser Val Glu Ala Ile Gln Lys Gly Leu Leu Gly Phe Glu Gly Val 340 345 350		
Gly Arg Arg Phe Gln Lys Tyr Gly Asp Ile Lys Leu Pro Asn Gly Gly 355 360 365		
Thr Ala Leu Leu Val Asp Asp Tyr Gly His His Pro Val Glu Met Ala 370 375 380		
Ala Thr Leu Ala Ala Ala Arg Gly Ala Tyr Pro Glu Lys Arg Leu Val 385 390 395 400		
Leu Ala Phe Gln Pro His Arg Tyr Thr Arg Thr Arg Asp Leu Phe Glu 405 410 415		
Asp Phe Thr Lys Val Leu Asn Thr Val Asp Ala Leu Val Leu Thr Glu		

420	425	430
Val Tyr Ala Ala Gly Glu Glu Pro Val Ala Ala Ala Asp Ser Arg Ala		
435	440	445
Leu Ala Arg Ala Ile Arg Val Leu Gly Lys Leu Glu Pro Ile Tyr Cys		
450	455	460
Glu Asn Val Ala Asp Leu Pro Gln Met Leu Met Asn Val Leu Gln Asp		
465	470	475
Gly Asp Val Val Leu Asn Met Gly Ala Gly Ser Ile Asn Arg Val Pro		
485	490	495
Ser Ala Leu Leu Glu Leu Ser Lys Gln Ile		
500	505	

<210> 311
 <211> 1521
 <212> DNA
 <213> Neisseria meningitidis

<400> 311

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aatcgagtta	ccaacatcca	ttttgtcgg	atcggcggcg	tcggcatgag	cggcatcgcc	180
gaagtcttgc	acaatttggg	ctttaaaagt	tccggttcgg	atcaggcgcg	aaatgccgct	240
accgagcatt	tgggcagcct	gggcattcaa	gtttatcccg	gccataccgc	cgaacacgtt	300
aacggtgcgg	atgtcgtcgt	tacctctacc	gccgtcaaaa	aagaaaatcc	cgaagttgtc	360
gctgcgttgg	agcagcaaat	tcccgttatt	ccgcgcgccc	tgatgttggc	ggagttgatg	420
cgcttccttg	acggcatcgc	cattgccggc	acgcacggca	aaaccacgac	caccagcctg	480
accgcctcca	tctcggcg	ggcaggactt	gacccgactt	tcgttatcgg	cggcaaaactc	540
aacgccgcag	gcactaacgc	ccgcttgggc	aaaggcgaat	acatcgttgc	cgaagccgac	600
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gaagaccata	tggataccta	cgggcacagc	gtcgaaaaac	tgcatcaggc	gtttatcgat	720
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cgcgcgattt	tgcccaaagt	gagcaaacct	tatgctactt	acggtttgga	cgataaccgcc	840
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caaatgaaag	gacatgagca	ggggtcgttt	gaagtcgtgc	tgaatatgcc	cggcagacac	960
aacgtgctga	acgcattggc	agccatcggc	gtggcgctgg	aagtcggcgc	atcggttgaa	1020
gcgatccaaa	aaggcttgct	cggctttgaa	ggcgtcggcc	gccgcttcca	aaaatacggc	1080
gacatcaagt	tgccaaacgg	cgggaccgcg	ctcttggtgg	acgactacgg	acaccacccc	1140
gtcgaaatgg	cggcgaccct	tgccgcgcga	cgcggcgcg	atctggaaaa	acgttttgta	1200
ctcgccttcc	agccgcaccg	ctatacccgc	acgcgcgatt	tgtttgaa	ctttaccaaa	1260
gtcctcaata	ccgttgacgc	gctggtgctg	accgaagttt	atgccgccgg	tgaagagccg	1320
attgccgcgc	ccgattcccg	cgctcttgcc	cgcgccatcc	gcgtgttggg	caaactcgag	1380
ccgatttact	gcgaaaacgt	tgccgatctg	cccgaatgc	tggtgaacgt	tttgcaggac	1440
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gcattgtcga	aacagatttg	a				1521

<210> 312
 <211> 506
 <212> PRT
 <213> Neisseria meningitidis

<400> 312

Met	Phe	Phe	Ile	Ser	Ile	Arg	Tyr	Ile	Phe	Val	Arg	Lys	Leu	Trp	Arg	
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			20					25					30			
Pro	Glu	Arg	Asn	Ile	Met	Met	Lys	Asn	Arg	Val	Thr	Asn	Ile	His	Phe	
			35				40					45				
Val	Gly	Ile	Gly	Gly	Val	Gly	Met	Ser	Gly	Ile	Ala	Glu	Val	Leu	His	
	50					55					60					
Asn	Leu	Gly	Phe	Lys	Val	Ser	Gly	Ser	Asp	Gln	Ala	Arg	Asn	Ala	Ala	
65					70				75						80	
Thr	Glu	His	Leu	Gly	Ser	Leu	Gly	Ile	Gln	Val	Tyr	Pro	Gly	His	Thr	
			85						90					95		
Ala	Glu	His	Val	Asn	Gly	Ala	Asp	Val	Val	Val	Thr	Ser	Thr	Ala	Val	
			100					105						110		
Lys	Lys	Glu	Asn	Pro	Glu	Val	Val	Ala	Ala	Leu	Glu	Gln	Gln	Ile	Pro	
		115					120					125				
Val	Ile	Pro	Arg	Ala	Leu	Met	Leu	Ala	Glu	Leu	Met	Arg	Phe	Arg	Asp	
	130					135					140					
Gly	Ile	Ala	Ile	Ala	Gly	Thr	His	Gly	Lys	Thr	Thr	Thr	Thr	Ser	Leu	
145					150					155					160	
Thr	Ala	Ser	Ile	Leu	Gly	Ala	Ala	Gly	Leu	Asp	Pro	Thr	Phe	Val	Ile	
			165						170					175		
Gly	Gly	Lys	Leu	Asn	Ala	Ala	Gly	Thr	Asn	Ala	Arg	Leu	Gly	Lys	Gly	
			180					185					190			
Glu	Tyr	Ile	Val	Ala	Glu	Ala	Asp	Glu	Ser	Asp	Ala	Ser	Phe	Leu	His	
	195						200					205				
Leu	Thr	Pro	Ile	Met	Ser	Val	Val	Thr	Asn	Ile	Asp	Glu	Asp	His	Met	
	210					215					220					
Asp	Thr	Tyr	Gly	His	Ser	Val	Glu	Lys	Leu	His	Gln	Ala	Phe	Ile	Asp	
225					230					235					240	
Phe	Ile	His	Arg	Met	Pro	Phe	Tyr	Gly	Lys	Ala	Phe	Leu	Cys	Ile	Asp	
				245					250					255		
Ser	Glu	His	Val	Arg	Ala	Ile	Leu	Pro	Lys	Val	Ser	Lys	Pro	Tyr	Ala	
			260					265					270			
Thr	Tyr	Gly	Leu	Asp	Asp	Thr	Ala	Asp	Ile	Tyr	Ala	Thr	Asp	Ile	Glu	
		275					280					285				
Asn	Val	Gly	Ala	Gln	Met	Lys	Phe	Thr	Val	His	Val	Gln	Met	Lys	Gly	
	290					295						300				

His Glu Gln Gly Ser Phe Glu Val Val Leu Asn Met Pro Gly Arg His
305 310 315 320

Asn Val Leu Asn Ala Leu Ala Ala Ile Gly Val Ala Leu Glu Val Gly
325 330 335

Ala Ser Val Glu Ala Ile Gln Lys Gly Leu Leu Gly Phe Glu Gly Val
340 345 350

Gly Arg Arg Phe Gln Lys Tyr Gly Asp Ile Lys Leu Pro Asn Gly Gly
355 360 365

Thr Ala Leu Leu Val Asp Asp Tyr Gly His His Pro Val Glu Met Ala
370 375 380

Ala Thr Leu Ala Ala Ala Arg Gly Ala Tyr Leu Glu Lys Arg Leu Val
385 390 395 400

Leu Ala Phe Gln Pro His Arg Tyr Thr Arg Thr Arg Asp Leu Phe Glu
405 410 415

Asp Phe Thr Lys Val Leu Asn Thr Val Asp Ala Leu Val Leu Thr Glu
420 425 430

Val Tyr Ala Ala Gly Glu Glu Pro Ile Ala Ala Ala Asp Ser Arg Ala
435 440 445

Leu Ala Arg Ala Ile Arg Val Leu Gly Lys Leu Glu Pro Ile Tyr Cys
450 455 460

Glu Asn Val Ala Asp Leu Pro Glu Met Leu Leu Asn Val Leu Gln Asp
465 470 475 480

Gly Asp Ile Val Leu Asn Met Gly Ala Gly Ser Ile Asn Arg Val Pro
485 490 495

Ala Ala Leu Leu Ala Leu Ser Lys Gln Ile
500 505

<210> 313

<211> 1521

<212> DNA

<213> Neisseria meningitidis

<400> 313

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aatcgagtga ccaacatcca ttttgctcgg atcggcgggcg tcggcatgag cggtatcgcc 180
gaagtcttgc acaatttggg ttttaaagtt tccggttcgg atcaggcgcg aaatgccgct 240
accgagcatt tgggcagcct gggcattcaa gtttatcccg gccataccgc agaacacggt 300
aacggtgcgg atgtcgtcgt tacctctacc gccgtcaaaa aagaaaatcc cgaagttgtc 360
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cgcttcgctg acggcatcgc cattgccggc acgcacggca aaaccacgac caccagcctg 480
accgcctcca tcctcggcgc ggcaggactt gaccgcgact tcgttatcgg cggcaaaactc 540
aacgccgcag gcaccaacgc ccgcttgggc aaaggcgaat acatcgttgc cgaagccgac 600

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gagtcggatg catcctttct gcacctgaca cgcattatgt ccgtcgttac caatatcgac 660
gaagaccata tggataccta cgggcacagt gttgagaagc tgcatacaggc gtttatcgat 720
ttcatccacc gtatgccctt ctacggcaaa gcctttttgt gtattgacag cgaacacgtc 780
cgcgcgattt tgcccaaagt gagcaaacct tatgtactt acggtttgga cgataccgcc 840
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caaatgaaag gacatgagca ggggtcgttt gaagtcgtgc tgaatatgcc cggcagacac 960
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gacatcaagt tgccaaacgg tggaaccgcg ctcttggtgg acgactacgg acaccacccc 1140
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<210> 314

<211> 506

<212> PRT

<213> Neisseria meningitidis

<400> 314

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Met Phe Phe Ile Ser Ile Arg Tyr Ile Phe Val Arg Lys Leu Trp Arg
  1             5             10             15

Ala Asn Gly Gln Pro Phe Lys Ile Thr Pro Leu Arg Ile Glu Asn Pro
      20             25             30

Pro Glu Arg Asn Ile Met Met Lys Asn Arg Val Thr Asn Ile His Phe
      35             40             45

Val Gly Ile Gly Gly Val Gly Met Ser Gly Ile Ala Glu Val Leu His
      50             55             60

Asn Leu Gly Phe Lys Val Ser Gly Ser Asp Gln Ala Arg Asn Ala Ala
      65             70             75             80

Thr Glu His Leu Gly Ser Leu Gly Ile Gln Val Tyr Pro Gly His Thr
      85             90             95

Ala Glu His Val Asn Gly Ala Asp Val Val Val Thr Ser Thr Ala Val
      100            105            110

Lys Lys Glu Asn Pro Glu Val Val Ala Ala Leu Glu Gln Gln Ile Pro
      115            120            125

Val Ile Pro Arg Ala Leu Met Leu Ala Glu Leu Met Arg Phe Arg Asp
      130            135            140

Gly Ile Ala Ile Ala Gly Thr His Gly Lys Thr Thr Thr Thr Ser Leu
      145            150            155            160

Thr Ala Ser Ile Leu Gly Ala Ala Gly Leu Asp Pro Thr Phe Val Ile
      165            170            175

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Gly Gly Lys Leu Asn Ala Ala Gly Thr Asn Ala Arg Leu Gly Lys Gly
 180 185 190
 Glu Tyr Ile Val Ala Glu Ala Asp Glu Ser Asp Ala Ser Phe Leu His
 195 200 205
 Leu Thr Pro Ile Met Ser Val Val Thr Asn Ile Asp Glu Asp His Met
 210 215 220
 Asp Thr Tyr Gly His Ser Val Glu Lys Leu His Gln Ala Phe Ile Asp
 225 230 235 240
 Phe Ile His Arg Met Pro Phe Tyr Gly Lys Ala Phe Leu Cys Ile Asp
 245 250 255
 Ser Glu His Val Arg Ala Ile Leu Pro Lys Val Ser Lys Pro Tyr Ala
 260 265 270
 Thr Tyr Gly Leu Asp Asp Thr Ala Asp Ile Tyr Ala Thr Asp Ile Glu
 275 280 285
 Asn Val Gly Ala Gln Met Lys Phe Thr Val His Val Gln Met Lys Gly
 290 295 300
 His Glu Gln Gly Ser Phe Glu Val Val Leu Asn Met Pro Gly Arg His
 305 310 315 320
 Asn Val Leu Asn Ala Leu Ala Ala Ile Gly Val Ala Leu Glu Val Gly
 325 330 335
 Ala Ser Val Glu Ala Ile Gln Lys Gly Leu Leu Gly Phe Glu Gly Val
 340 345 350
 Gly Arg Arg Phe Gln Lys Tyr Gly Asp Ile Lys Leu Pro Asn Gly Gly
 355 360 365
 Thr Ala Leu Leu Val Asp Asp Tyr Gly His His Pro Val Glu Met Ala
 370 375 380
 Ala Thr Leu Ser Ala Ala Arg Gly Ala Tyr Pro Glu Lys Arg Leu Val
 385 390 395 400
 Leu Ala Phe Gln Pro His Arg Tyr Thr Arg Thr Arg Asp Leu Phe Glu
 405 410 415
 Asp Phe Thr Lys Val Leu Asn Thr Val Asp Ala Leu Val Leu Thr Glu
 420 425 430
 Val Tyr Ala Ala Gly Glu Glu Pro Ile Ala Ala Ala Asp Ser Arg Ala
 435 440 445
 Leu Ala Arg Ala Ile Arg Val Leu Gly Lys Leu Glu Pro Ile Tyr Cys
 450 455 460
 Glu Asn Val Ala Asp Leu Pro Glu Met Leu Leu Asn Val Leu Gln Asp
 465 470 475 480

Gly Asp Ile Val Leu Asn Met Gly Ala Gly Ser Ile Asn Arg Val Pro
485 490 495

Ala Ala Leu Leu Glu Leu Ser Lys Gln Ile
500 505

<210> 315

<211> 831

<212> DNA

<213> Neisseria gonorrhoeae

<400> 315

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gccttcgacc ctaaggaaac gccgttatcc gaactgaagg agcggggcct tcagacggca 180
ttcaacatcc ttacacgtac ttacggcgaa gacggggctg ttcagggtgc attggaactg 240
ttgggcattc cctataccgg cagcgggtgc gccgcctccg ccatcggcat ggacaaatac 300
cgctgcaaac tgatttggca ggcattggga ttaccggttc ccgagttcgc cgtactgtac 360
gatgataccg atttcgatgc cgtcgaagaa aaattgggtc tgccgatgtt tgtgaagccg 420
gcggccgaag gcagcagcgt cggcgtggta aaagtcaaag aaaaaggccg tctgaaaagc 480
gtttacgaag aattgaaaca ctttcagggg cgaaatcatt gccgaacgtt ttatcggcgg 540
cggcgaatat tcttgccccg tcttgaacgg caaagggtcg cccggcatac acatcatccc 600
cgcaaccgag ttttacgact acgaagccaa gtacaaccga gacgacacca tttatcaatg 660
tccttcggaa gatttgaccg aagccgaaga aagcctgatg cgcgaaactg cggttcgcgg 720
cgcacaggca atcgggtgcg aaggctgcgt gcgcgtcgat ttcctcaaag ataccgacgg 780
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<210> 316

<211> 276

<212> PRT

<213> Neisseria gonorrhoeae

<400> 316

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Glu Arg Glu Ile Ser Leu Asp Ser Gly Thr Ala Ile Leu Asn Ala Leu
20 25 30

Lys Ser Lys Gly Ile Asp Ala Tyr Ala Phe Asp Pro Lys Glu Thr Pro
35 40 45

Leu Ser Glu Leu Lys Glu Arg Gly Phe Gln Thr Ala Phe Asn Ile Leu
50 55 60

His Gly Thr Tyr Gly Glu Asp Gly Ala Val Gln Gly Ala Leu Glu Leu
65 70 75 80

Leu Gly Ile Pro Tyr Thr Gly Ser Gly Val Ala Ala Ser Ala Ile Gly
85 90 95

Met Asp Lys Tyr Arg Cys Lys Leu Ile Trp Gln Ala Leu Gly Leu Pro
100 105 110

Val Pro Glu Phe Ala Val Leu Tyr Asp Asp Thr Asp Phe Asp Ala Val

115		120		125
Glu Glu Lys Leu Gly Leu Pro Met Phe Val Lys Pro Ala Ala Glu Gly				
130		135		140
Ser Ser Val Gly Val Val Lys Val Lys Glu Lys Gly Arg Leu Lys Ser				
145		150		155
				160
Val Tyr Glu Glu Leu Lys His Leu Gln Gly Arg Asn His Cys Arg Thr				
		165		170
				175
Phe Tyr Arg Arg Arg Arg Ile Phe Leu Pro Arg Pro Glu Arg Gln Arg				
		180		185
				190
Ala Ala Arg His Thr His His Pro Arg Asn Arg Val Leu Arg Leu Arg				
		195		200
				205
Ser Gln Val Gln Pro Arg Arg His His Leu Ser Met Ser Phe Gly Arg				
		210		215
				220
Phe Asp Arg Ser Arg Arg Lys Pro Asp Ala Arg Thr Gly Gly Ser Arg				
		225		230
				235
				240
Arg Thr Gly Asn Arg Cys Gly Arg Leu Arg Ala Arg Arg Phe Pro Gln				
		245		250
				255
Arg Tyr Arg Arg Gln Thr Leu Ser Val Gly Asn Gln His Pro Ala Arg				
		260		265
				270
Tyr Asp Arg Pro				
		275		

<210> 317
 <211> 830
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 317
 atgcagaatt ttggcaaagt ggccgtattg atgggcggtt tttccagcga acgagaaatc 60
 tcgctggaca gcggcaccgc cattttgaat gctttaaaaa gcaaaggcat agacgcatac 120
 gccttcgata ctaaagaaac cccattgtct gaattgaagg cacaaggttt tcagacggca 180
 ttcaacatcc ttcacggtag ttacggcraa gacggggcgg ttcagggtgc attggaactg 240
 ttgggcattc cctataccgg cagcgggtgc gccgcattcc ccatcggcat ggacaaatac 300
 cgctgcaaac tgatttggca ggcattggga ttgcccggtc ccgagttcgc cgtcctgcac 360
 gacgacactg atttcgatgc cgtcgaagaa aaattgggcc tgccgatgtt tgtgaaaccg 420
 gcggccgaag gcagcagcgt aggcgtggtg aaagtcaaag gaaaaggccg tctgaaaagc 480
 gtttacgaag aattgaaaca ccttcagggc gaaatcattg ccgaacgttt tatcggcggc 540
 ggccaatatt cctgccccgt cctgaacggc aaagggctgc ccggcataca catcattccc 600
 gcaaccgagt tttacgacta cgaagccaag tacaaccgag acgacaccat ttatcaatgt 660
 ccttcggaag atttgaccga agccgaagaa agcctgatgc gcgaactggc ggttcgcggc 720
 gcgcaggcaa tcggtgcgga aggctgcgtg cgcgtcgatt tcctcaaaga taccgacggc 780
 aaactctatc tgttggaat caacaccctg cccggtatga cgagccatag 830

<210> 318
 <211> 276

<212> PRT

<213> Neisseria meningitidis

<400> 318

Met Gln Asn Phe Gly Lys Val Ala Val Leu Met Gly Gly Phe Ser Ser
1 5 10 15
Glu Arg Glu Ile Ser Leu Asp Ser Gly Thr Ala Ile Leu Asn Ala Leu
20 25 30
Lys Ser Lys Gly Ile Asp Ala Tyr Ala Phe Asp Pro Lys Glu Thr Pro
35 40 45
Leu Ser Glu Leu Lys Ala Gln Gly Phe Gln Thr Ala Phe Asn Ile Leu
50 55 60
His Gly Thr Tyr Gly Xaa Asp Gly Ala Val Gln Gly Ala Leu Glu Leu
65 70 75 80
Leu Gly Ile Pro Tyr Thr Gly Ser Gly Val Ala Ala Ser Ala Ile Gly
85 90 95
Met Asp Lys Tyr Arg Cys Lys Leu Ile Trp Gln Ala Leu Gly Leu Pro
100 105 110
Val Pro Glu Phe Ala Val Leu His Asp Asp Thr Asp Phe Asp Ala Val
115 120 125
Glu Glu Lys Leu Gly Leu Pro Met Phe Val Lys Pro Ala Ala Glu Gly
130 135 140
Ser Ser Val Gly Val Val Lys Val Lys Gly Lys Gly Arg Leu Lys Ser
145 150 155 160
Val Tyr Glu Glu Leu Lys His Leu Gln Xaa Arg Asn His Cys Arg Thr
165 170 175
Phe Tyr Arg Arg Arg Arg Ile Phe Leu Pro Arg Pro Glu Arg Gln Arg
180 185 190
Ala Ala Arg His Thr His His Ser Arg Asn Arg Val Leu Arg Leu Arg
195 200 205
Ser Gln Val Gln Pro Arg Arg His His Leu Ser Met Ser Phe Gly Arg
210 215 220
Phe Asp Arg Ser Arg Arg Lys Pro Asp Ala Arg Thr Gly Gly Ser Arg
225 230 235 240
Arg Ala Gly Asn Arg Cys Gly Arg Leu Arg Ala Arg Arg Phe Pro Gln
245 250 255
Arg Tyr Arg Arg Gln Thr Leu Ser Val Gly Asn Gln His Pro Ala Arg
260 265 270
Tyr Asp Glu Pro
275

<210> 319
 <211> 830
 <212> DNA
 <213> Neisseria meningitidis

<400> 319
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 tcgctggaca gcggcaccgc ctttttgaat gctttaaaaa gcaaaggcat agacgcatac 120
 gccttcgata ccaaggaaac cccattgtct gaattgaagg cacaaggttt tcagacggca 180
 ttcaacatcc ttacgggtac ttacggcgaa gacggggctg ttcagggtgc attggaactg 240
 ttgggcattc cctataccgg cagcgggtgc gccgcatccg ccatcggcac ggacaaatac 300
 cgctgcaaac tgatttggca ggcattggga ttgcccgttc ccgagttcgc cgtcctgcac 360
 gacgacactg atttcgatgc cgtcgaagaa aaattggggc tgccgatgtt tgtgaaaccg 420
 gcggccgaag gcagcagcgt aggcgtggta aaagtcaaag gaaaaggccg tctgaaaagc 480
 gtttacgaag aattgaaaca ctttcagggc gaaatcattg ccgaacgggt tatcgggcgc 540
 ggcgaatatt cctgcctgtg gttgaacggc aaaggcctgc ccggcataca catcatcccc 600
 gcgaccgagt tttatgacta cgaagccaag tacaaccgca acgacacat ttatcaatgt 660
 ccttcggaag atctgaccga agccgaagaa agcctgatgc gcgaactggc ggttcgcggc 720
 gcgcaggcaa tcggtgcgga aggctgcgtg cgcgtcgatt tcctcaaaga taccgacggc 780
 aaactctatc tgttggaaat caacaccctg cccggtatga ccggccatag 830

<210> 320
 <211> 275
 <212> PRT
 <213> Neisseria meningitidis

<400> 320
 Met Gln Asn Phe Gly Lys Val Ala Val Leu Met Gly Gly Phe Ser Ser
 1 5 10 15
 Glu Arg Glu Ile Ser Leu Asp Ser Gly Thr Ala Ile Leu Asn Ala Leu
 20 25 30
 Lys Ser Lys Gly Ile Asp Ala Tyr Ala Phe Asp Pro Lys Glu Thr Pro
 35 40 45
 Leu Ser Glu Leu Lys Ala Gln Gly Phe Gln Thr Ala Phe Asn Ile Leu
 50 55 60
 His Gly Thr Tyr Gly Glu Asp Gly Ala Val Gln Gly Ala Leu Glu Leu
 65 70 75 80
 Leu Gly Ile Pro Tyr Thr Gly Ser Gly Val Ala Ala Ser Ala Ile Gly
 85 90 95
 Met Asp Lys Tyr Arg Cys Lys Leu Ile Trp Gln Ala Leu Gly Leu Pro
 100 105 110
 Val Pro Glu Phe Ala Val Leu His Asp Asp Thr Asp Phe Asp Ala Val
 115 120 125
 Glu Glu Lys Leu Gly Leu Pro Met Phe Val Lys Pro Ala Ala Glu Gly
 130 135 140

Ser Ser Val Gly Val Val Lys Val Lys Gly Lys Gly Arg Leu Lys Ser
 145 150 155 160

Val Tyr Glu Glu Leu Lys His Phe Gln Xaa Arg Asn His Cys Arg Thr
 165 170 175

Val Tyr Arg Arg Arg Arg Ile Phe Leu Pro Cys Val Glu Arg Gln Arg
 180 185 190

Pro Ala Arg His Thr His His Pro Arg Asp Arg Val Leu Leu Arg Ser
 195 200 205

Gln Val Gln Pro Gln Arg His His Leu Ser Met Ser Phe Gly Arg Ser
 210 215 220

Asp Arg Ser Arg Arg Lys Pro Asp Ala Arg Thr Gly Gly Ser Arg Arg
 225 230 235 240

Ala Gly Asn Arg Cys Gly Arg Leu Arg Ala Arg Arg Phe Pro Gln Arg
 245 250 255

Tyr Arg Arg Gln Thr Leu Ser Val Gly Asn Gln His Pro Ala Arg Tyr
 260 265 270

Asp Arg Pro
 275

<210> 321

<211> 312

<212> DNA

<213> Neisseria gonorrhoeae

<400> 321

atgtattcgc ctttgcccaa gcgggcggtg gtgcctgcgg cggttgagttt gccgccgata 60
 acgaaagtgg ggtcgagtcg tgccgcgcgc aggatggagg cggtcaggct ggtggtcgtg 120
 gttttgccgt gcgtaccggc aatggcgatg ccgtcacgga agcgcacag ctctgccagc 180
 atcaaggcgc gcggaataac gggaatttgc cgctccaacg cagcgacaac ttcgggattt 240
 tctttcttga cggcggtaga ggcaacgacg acatccgcac cgtaaactg ttctgcggtg 300
 tggccgggat aa 312

<210> 322

<211> 103

<212> PRT

<213> Neisseria gonorrhoeae

<400> 322

Met Tyr Ser Pro Leu Pro Lys Arg Ala Leu Val Pro Ala Ala Leu Ser
 1 5 10 15

Leu Pro Pro Ile Thr Lys Val Gly Ser Ser Pro Ala Ala Pro Arg Met
 20 25 30

Glu Ala Val Arg Leu Val Val Val Leu Pro Cys Val Pro Ala Met
 35 40 45

Ala Met Pro Ser Arg Lys Arg Ile Ser Ser Ala Ser Ile Lys Ala Arg
50 55 60

Gly Ile Thr Gly Ile Cys Arg Ser Asn Ala Ala Thr Thr Ser Gly Phe
65 70 75 80

Ser Phe Leu Thr Ala Val Glu Ala Thr Thr Thr Ser Ala Pro Leu Thr
85 90 95

Cys Ser Ala Val Trp Pro Gly
100

<210> 323

<211> 312

<212> DNA

<213> Neisseria meningitidis

<400> 323

atgtattcgc ctttgcccaa gcgggcgtta gtgcctgcgg cgttgagttt gccgccgata 60
acgaaagtcg ggtcaagtcc tgccgcgcgc aggatggagg cggtcaggct ggtggtcgtg 120
gttttgccgt gcgtgccggc aatggcgatg ccgtcacgga agcgcaccaa ctccgccaac 180
atcagggcgc gcggaataac gggaatttgc tgctccaacg cagcgacaac ttcgggattt 240
tcttttttga cggcggtaga ggtaacgacg acatccgcac cgtaaacgtg ttcggcggtg 300
tggccgggat aa 312

<210> 324

<211> 103

<212> PRT

<213> Neisseria meningitidis

<400> 324

Met Tyr Ser Pro Leu Pro Lys Arg Ala Leu Val Pro Ala Ala Leu Ser
1 5 10 15

Leu Pro Pro Ile Thr Lys Val Gly Ser Ser Pro Ala Ala Pro Arg Met
20 25 30

Glu Ala Val Arg Leu Val Val Val Val Leu Pro Cys Val Pro Ala Met
35 40 45

Ala Met Pro Ser Arg Lys Arg Ile Asn Ser Ala Asn Ile Arg Ala Arg
50 55 60

Gly Ile Thr Gly Ile Cys Cys Ser Asn Ala Ala Thr Thr Ser Gly Phe
65 70 75 80

Ser Phe Leu Thr Ala Val Glu Val Thr Thr Thr Ser Ala Pro Leu Thr
85 90 95

Cys Ser Ala Val Trp Pro Gly
100

<210> 325

<211> 312
<212> DNA
<213> Neisseria meningitidis

<400> 325
atgtattcgc ctttgcccaa gcgggcggtg gtgcctgcgg cggtgagttt gccgccgata 60
acgaaagtcg ggtcaagtcc tgccgcgcgg aggatggagg cggtcaggct ggtggtcgtg 120
gttttgccgt gcgtgccggc aatggcgatg ccgtcacgga agcgcatcaa ctccgccaac 180
atcagggcgc gcggaataac gggaatttgc tgctccaacg cagcgacaac ttcgggattt 240
tcttttttga cggcggtaga ggtaacgcag acatccgcac cgtaaacgtg ttctgcggta 300
tggccgggat aa 312

<210> 326
<211> 103
<212> PRT
<213> Neisseria meningitidis

<400> 326
Met Tyr Ser Pro Leu Pro Lys Arg Ala Leu Val Pro Ala Ala Leu Ser
1 5 10 15
Leu Pro Pro Ile Thr Lys Val Gly Ser Ser Pro Ala Ala Pro Arg Met
20 25 30
Glu Ala Val Arg Leu Val Val Val Val Leu Pro Cys Val Pro Ala Met
35 40 45
Ala Met Pro Ser Arg Lys Arg Ile Asn Ser Ala Asn Ile Arg Ala Arg
50 55 60
Gly Ile Thr Gly Ile Cys Cys Ser Asn Ala Ala Thr Thr Ser Gly Phe
65 70 75 80
Ser Phe Leu Thr Ala Val Glu Val Thr Thr Thr Ser Ala Pro Leu Thr
85 90 95
Cys Ser Ala Val Trp Pro Gly
100

<210> 327
<211> 375
<212> DNA
<213> Neisseria gonorrhoeae

<400> 327
atgtcctttc atttgaacat ggacggtgaa tttcatttgc gcgccgacgt tttcgatgtc 60
ggtggcgtag atgtcggcgg tatcgtccaa accgtaagta gcataagggt tgctcacttt 120
gggcaaaatc gcgcggacgt gttcgtctgc aacacacaaa aaggctttgc cgtagaaggg 180
catacggtgg atgaaatcga taaacgcctg atgcagtttt tcgacgctgt gcccgtaggt 240
atccatatgg tcttcgtcga tattggtaac gacggacata atcgggggtca gtgtaggaaa 300
gaggcatcgg atcgtcggct tcggcaacga tgtattcgcc tttgccaag cgggcggttg 360
tgctgcggc gttga 375

<210> 328

<211> 124
<212> PRT
<213> Neisseria gonorrhoeae

<400> 328

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Met Ser Phe His Leu Asn Met Asp Gly Glu Phe His Leu Arg Ala Asp
  1              5              10              15

Val Phe Asp Val Gly Gly Val Asp Val Gly Gly Ile Val Gln Thr Val
      20              25              30

Ser Ser Ile Arg Phe Ala His Phe Gly Gln Asn Arg Ala Asp Val Phe
      35              40              45

Ala Val Asn Thr Gln Lys Gly Phe Ala Val Glu Gly His Thr Val Asp
      50              55              60

Glu Ile Asp Lys Arg Leu Met Gln Phe Phe Asp Ala Val Pro Val Gly
      65              70              75              80

Ile His Met Val Phe Val Asp Ile Gly Asn Asp Gly His Asn Arg Gly
      85              90              95

Gln Cys Arg Lys Glu Ala Ser Asp Arg Arg Leu Arg Gln Arg Cys Ile
      100              105              110

Arg Leu Cys Pro Ser Gly Arg Trp Cys Leu Arg Arg
      115              120
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<210> 329
<211> 375
<212> DNA
<213> Neisseria meningitidis

<400> 329

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atgtcctttc atttgaacat ggacgggtgaa tttcatTTTgc ggcgccgacgt tttcgatgtc 60
ggtggcgtag atgtcggcgg tatcgtccaa accgtaagta gcataagggt tgctcacttt 120
gggcaaaatc ggcgggacgt gtTCGTGtc aatacacaaa aaggctttgc cgtagaagg 180
catacggtag atgaaatcga taaacgcctg atgcagtttt tcgacgctgt gcccgtaggt 240
atccatatgg ttttcgtcga tattggtaac gacggacata atcggtgtca gtgcagaaag 300
gatgcatccg accgtcggct tcggcaacga tgtattcgcc tttgcccaag cgggcgtag 360
tgctgcggc gttga 375
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<210> 330
<211> 124
<212> PRT
<213> Neisseria meningitidis

<400> 330

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Met Ser Phe His Leu Asn Met Asp Gly Glu Phe His Leu Arg Ala Asp
  1              5              10              15

Val Phe Asp Val Gly Gly Val Asp Val Gly Gly Ile Val Gln Thr Val
      20              25              30
```


Gln Cys Arg Lys Asp Ala Ser Asp Arg Arg Leu Arg Gln Arg Cys Ile
100 105 110

Arg Leu Cys Pro Ser Gly Arg Trp Cys Leu Arg Arg
115 120

<210> 333
<211> 375
<212> DNA
<213> Neisseria gonorrhoeae

<400> 333
atggccggtc ataccgggca ggggtgttgat ttccaacaga tagagtttgc cgtcggtatc 60
tttgaggaaa tcgacgcgca cgcagccttc cgcaccgatt gcctgtgcgc cgcgaaccgc 120
cagttcgcgc atcaggcttt ctccggcttc ggtcaaactc tccgaaggac attgataaat 180
gggtgcgtct cggttgtact tggcttcgta gtcgtaaaac tcggttgccg ggatgatgtg 240
tatgccgggc agccctttgc cgttcaggac ggggcaggaa tattcgccgc cgccgataaa 300
acgttcggca atgatttcgc cccgtgaagg gtttcaattc ttcgtaaacg cttttcagac 360
ggcctttttc ttgga 375

<210> 334
<211> 124
<212> PRT
<213> Neisseria gonorrhoeae

<400> 334
Met Ala Gly His Thr Gly Gln Gly Val Asp Phe Gln Gln Ile Glu Phe
1 5 10 15

Ala Val Gly Ile Phe Glu Glu Ile Asp Ala His Ala Ala Phe Arg Thr
20 25 30

Asp Cys Leu Cys Ala Ala Asn Arg Gln Phe Ala His Gln Ala Phe Phe
35 40 45

Gly Phe Gly Gln Ile Phe Arg Arg Thr Leu Ile Asn Gly Val Val Ser
50 55 60

Val Val Leu Gly Phe Val Val Val Lys Leu Gly Cys Gly Asp Asp Val
65 70 75 80

Tyr Ala Gly Gln Pro Phe Ala Val Gln Asp Gly Ala Gly Ile Phe Ala
85 90 95

Ala Ala Asp Lys Thr Phe Gly Asn Asp Phe Ala Pro Glu Gly Val Ser
100 105 110

Ile Leu Arg Lys Arg Phe Ser Asp Gly Leu Phe Leu
115 120

<210> 335
<211> 374

<212> DNA

<213> *Neisseria meningitidis*

<400> 335

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atggctcgtc ataccgggca ggggtgtgat ttccaacaga tagagtttgc cgtcgggtatc 60
tttgaggaaa tcgacgcgca cgcagccttc cgcaccgatt gcctgcgcgc cgcgaaccgc 120
cagttcgcgc atcaggcttt cttcggcttc ggtcaaatct tccgaaggac attgataaat 180
gggtgcgtcg cggttgtact tggcttcgta gtcgtaaaac tcggttcgcg gaatgatgtg 240
tatgccgggc agccctttgc cgttcaggac ggggcaggaa tattcgccgc cgccgataaa 300
acgttcggca atgatttcgc cctgaaggtg tttcaattct tcgtaaacgc ttttcagacg 360
gccttttctt ttga 374
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<210> 336

<211> 124

<212> PRT

<213> *Neisseria meningitidis*

<400> 336

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Met Ala Arg His Thr Gly Gln Gly Val Asp Phe Gln Gln Ile Glu Phe
  1             5             10             15

Ala Val Gly Ile Phe Glu Glu Ile Asp Ala His Ala Ala Phe Arg Thr
      20             25             30

Asp Cys Leu Arg Ala Ala Asn Arg Gln Phe Ala His Gln Ala Phe Phe
      35             40             45

Gly Phe Gly Gln Ile Phe Arg Arg Thr Leu Ile Asn Gly Val Val Ala
      50             55             60

Val Val Leu Gly Phe Val Val Val Lys Leu Gly Cys Gly Asn Asp Val
      65             70             75             80

Tyr Ala Gly Gln Pro Phe Ala Val Gln Asp Gly Ala Gly Ile Phe Ala
      85             90             95

Ala Ala Asp Lys Thr Phe Gly Asn Asp Phe Ala Xaa Glu Gly Val Ser
      100            105            110

Ile Leu Arg Lys Arg Phe Ser Asp Gly Leu Phe Leu
      115            120
```

<210> 337

<211> 374

<212> DNA

<213> *Neisseria meningitidis*

<400> 337

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atggccgggtc ataccgggca ggggtgtgat ttccaacaga tagagtttgc cgtcgggtatc 60
tttgaggaaa tcgacgcgca cgcagccttc cgcaccgatt gcctgcgcgc cgcgaaccgc 120
cagttcgcgc atcaggcttt cttcggcttc ggtcagatct tccgaaggac attgataaat 180
gggtgcgttg cggttgtact tggcttcgta gtcataaaac tcggtcgcgc ggatgatgtg 240
tatgccgggc aggcctttgc cgttcaacac agggcaggaa tattcgccgc cgccgataaa 300
ccgttcggca atgatttcgc cctgaaagtg tttcaattct tcgtaaacgc ttttcagacg 360
gccttttctt ttga 374
```

<210> 338
<211> 124
<212> PRT
<213> *Neisseria meningitidis*

<400> 338
Met Ala Gly His Thr Gly Gln Gly Val Asp Phe Gln Gln Ile Glu Phe
1 5 10 15
Ala Val Gly Ile Phe Glu Glu Ile Asp Ala His Ala Ala Phe Arg Thr
20 25 30
Asp Cys Leu Arg Ala Ala Asn Arg Gln Phe Ala His Gln Ala Phe Phe
35 40 45
Gly Phe Gly Gln Ile Phe Arg Arg Thr Leu Ile Asn Gly Val Val Ala
50 55 60
Val Val Leu Gly Phe Val Val Ile Lys Leu Gly Arg Gly Asp Asp Val
65 70 75 80
Tyr Ala Gly Gln Ala Phe Ala Val Gln His Arg Ala Gly Ile Phe Ala
85 90 95
Ala Ala Asp Lys Pro Phe Gly Asn Asp Phe Ala Xaa Glu Ser Val Ser
100 105 110
Ile Leu Arg Lys Arg Phe Ser Asp Gly Leu Phe Leu
115 120

<210> 339
<211> 1311
<212> DNA
<213> *Neisseria gonorrhoeae*

<400> 339
atggatattt caaaacaaac attgctggat agggttttta acctgaaggc aaacgggtacg 60
acgggtacgta ccgagttgat ggcggggtttg acgacctttt tgacgatgtg ctacatcggt 120
atcgtcaatc ccctgatattt gggcgagacc ggaatggata tgggggcggt attcgtcgct 180
acctgtatcg catccgccat cggctgtttt gtcattgggtt ttatcggcaa ctatccgatt 240
gcgcttgccc cggggatggg gctgaatgcc tatttcacct ttgccgtcgt taagggtatg 300
ggcgtgcctt ggcaggtggc gttgggtgcg gtgttcattt ccggtctgat tttcatcctg 360
ttcagctttt ttaaagtcag ggaaatgctg gtcaacgcac tgcctatggg tttgaaaatg 420
tcgattgccg ccggtatcgg tttgtttttg gcaactgattt ccctgaaagg cgcaggcatt 480
atcgttgcca atccggcaac cttggtcggc ttgggcgata ttcacagcc cagcgcactg 540
ttggcattgt tcggttttgt catgggtggc gtattggggg atttccgcgt tcaaggcgca 600
atcatcatca ccattctgac gattaccgtc attgccagcc tgatgggttt gaacgagttt 660
cacggcgtgg tcggcgaagt accgggcatt gcgccgacct ttatgcagat ggattttaaa 720
ggtctgttta ccgtcagcat ggtcagcgtg attttcgtct tcttcttggt cgatttgttc 780
gacagtaccg gaacgctggt cggcgtatcc caccgtgccg gactgctggt ggacggtaag 840
ctgccccgcc tgaacgcgc actgcttgca gactctaccg ccattgtggc aggtgcggct 900
ttgggtactt cttcaaccac gccttatgtg gaaagcgcg cgggcgatc ggcaggcgga 960
cggaccggcc tgacggcggt taccgtcggc gtattgatgc tggcgtgtct gatgttctcc 1020
ccattggcga aaagtgttcc ggtatttgcc accgcgcccc cactgcttta tgcggcacg 1080

cagatgctcc gcagtgcgag ggacattgat tgggacgata tgactgaagc cgcgcccgcg 1140
 ttcctgacca ttgtcttcat gccgtttacc tattcgattg cagacggcat cgccttcggc 1200
 ttcacagct atgccgtggt caaacttttg tgtcgccgga ctggggacgt gccgcctatg 1260
 gtatggggtg ttgccgtatt gtgggcattg aaattctggt atttgggctg a 1311

<210> 340

<211> 436

<212> PRT

<213> Neisseria gonorrhoeae

<400> 340

Met	Asp	Ile	Ser	Lys	Gln	Thr	Leu	Leu	Asp	Arg	Val	Phe	Asn	Leu	Lys
1				5					10					15	
Ala	Asn	Gly	Thr	Thr	Val	Arg	Thr	Glu	Leu	Met	Ala	Gly	Leu	Thr	Thr
			20					25					30		
Phe	Leu	Thr	Met	Cys	Tyr	Ile	Val	Ile	Val	Asn	Pro	Leu	Ile	Leu	Gly
		35					40					45			
Glu	Thr	Gly	Met	Asp	Met	Gly	Ala	Val	Phe	Val	Ala	Thr	Cys	Ile	Ala
	50					55					60				
Ser	Ala	Ile	Gly	Cys	Phe	Val	Met	Gly	Phe	Ile	Gly	Asn	Tyr	Pro	Ile
65					70					75				80	
Ala	Leu	Ala	Pro	Gly	Met	Gly	Leu	Asn	Ala	Tyr	Phe	Thr	Phe	Ala	Val
				85					90					95	
Val	Lys	Gly	Met	Gly	Val	Pro	Trp	Gln	Val	Ala	Leu	Gly	Ala	Val	Phe
		100						105					110		
Ile	Ser	Gly	Leu	Ile	Phe	Ile	Leu	Phe	Ser	Phe	Phe	Lys	Val	Arg	Glu
		115					120					125			
Met	Leu	Val	Asn	Ala	Leu	Pro	Met	Gly	Leu	Lys	Met	Ser	Ile	Ala	Ala
	130					135					140				
Gly	Ile	Gly	Leu	Phe	Leu	Ala	Leu	Ile	Ser	Leu	Lys	Gly	Ala	Gly	Ile
145				150						155				160	
Ile	Val	Ala	Asn	Pro	Ala	Thr	Leu	Val	Gly	Leu	Gly	Asp	Ile	His	Gln
			165						170				175		
Pro	Ser	Ala	Leu	Leu	Ala	Leu	Phe	Gly	Phe	Val	Met	Val	Val	Val	Leu
			180					185					190		
Gly	Tyr	Phe	Arg	Val	Gln	Gly	Ala	Ile	Ile	Ile	Thr	Ile	Leu	Thr	Ile
	195					200						205			
Thr	Val	Ile	Ala	Ser	Leu	Met	Gly	Leu	Asn	Glu	Phe	His	Gly	Val	Val
	210					215					220				
Gly	Glu	Val	Pro	Gly	Ile	Ala	Pro	Thr	Phe	Met	Gln	Met	Asp	Phe	Lys
225					230					235				240	

Gly Leu Phe Thr Val Ser Met Val Ser Val Ile Phe Val Phe Phe Leu
 245 250 255
 Val Asp Leu Phe Asp Ser Thr Gly Thr Leu Val Gly Val Ser His Arg
 260 265 270
 Ala Gly Leu Leu Val Asp Gly Lys Leu Pro Arg Leu Lys Arg Ala Leu
 275 280 285
 Leu Ala Asp Ser Thr Ala Ile Val Ala Gly Ala Ala Leu Gly Thr Ser
 290 295 300
 Ser Thr Thr Pro Tyr Val Glu Ser Ala Ala Gly Val Ser Ala Gly Gly
 305 310 315 320
 Arg Thr Gly Leu Thr Ala Val Thr Val Gly Val Leu Met Leu Ala Cys
 325 330 335
 Leu Met Phe Ser Pro Leu Ala Lys Ser Val Pro Val Phe Ala Thr Ala
 340 345 350
 Pro Ala Leu Leu Tyr Val Gly Thr Gln Met Leu Arg Ser Ala Arg Asp
 355 360 365
 Ile Asp Trp Asp Asp Met Thr Glu Ala Ala Pro Ala Phe Leu Thr Ile
 370 375 380
 Val Phe Met Pro Phe Thr Tyr Ser Ile Ala Asp Gly Ile Ala Phe Gly
 385 390 395 400
 Phe Ile Ser Tyr Ala Val Val Lys Leu Leu Cys Arg Arg Thr Gly Asp
 405 410 415
 Val Pro Pro Met Val Trp Val Val Ala Val Leu Trp Ala Leu Lys Phe
 420 425 430
 Trp Tyr Leu Gly
 435

<210> 341

<211> 1311

<212> DNA

<213> Neisseria meningitidis

<400> 341

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 atcgtaacc ctcygatttt gggcgagacc ggcatggata tgggggcggt attcgtcgct 180
 acctgtatcg cgtctgccat cggctgtttt gttatgggtt ttgtcggcaa ctatccgatt 240
 gcaactgcac cggggatggg gctgaatgcc tatttcacct ttgccgtcgt taagggtatg 300
 ggcgtgcctt ggcaggttgc gttgggtgct gtgttcacct ccggtctgat ttttatcctg 360
 ttcagctttt ttaaagtcag ggaaatgctg gtcaacgcac tgcctatggg tttgaaaatg 420
 tcgattgctg ccggtatcgg tttgtttttg gcactgattt ccctgaaagg cgcaggcatt 480
 atcgttgcca atccggcaac cttgggtcgg ttgggcgata ttcacagcc gtccgcggtt 540
 ttggcattgt tcggttttgc tatgggtggtc gtattgggac atttccgcgt tcaaggcgca 600

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atcatcatca ccattcttgac cattaccgtc attgccagcc tgatggggtt gaatgaattt 660
cacggcatca tcggcgaaagt accgagcatt gcgccgactt ttatgcagat ggattttgaa 720
ggcctgttta ccgtcagcat ggtcagtgtg attttcgtct tcttcttggt cgatctattt 780
gacagtaccg gaacgctggt cggcatatcc caccgtgccg ggctgctggt ggacggtaag 840
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cagatgctcc gcagtgcgag ggatattgat tgggacgata tgacggaagc cgcacctgcg 1140
ttcctgacca ttgttttcat gccgtttact tattcgattg cagacggcat cgctttcggc 1200
ttcatcagtt atgccgtggt taaactttta tgccgccgca ccaaagacgt tccgcctatg 1260
gtatggattg ttgccgtatt gtgggcactg aaattctggt atttgggctg a 1311

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<210> 342

<211> 436

<212> PRT

<213> Neisseria meningitidis

<400> 342

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Met Asp Thr Ser Lys Gln Thr Leu Leu Asp Gly Ile Phe Lys Leu Lys
 1             5             10             15

Ala Asn Gly Thr Thr Val Arg Thr Glu Leu Met Ala Gly Leu Thr Thr
      20             25             30

Phe Leu Thr Met Cys Tyr Ile Val Ile Val Asn Pro Xaa Ile Leu Gly
      35             40             45

Glu Thr Gly Met Asp Met Gly Ala Val Phe Val Ala Thr Cys Ile Ala
      50             55             60

Ser Ala Ile Gly Cys Phe Val Met Gly Phe Val Gly Asn Tyr Pro Ile
      65             70             75             80

Ala Leu Ala Pro Gly Met Gly Leu Asn Ala Tyr Phe Thr Phe Ala Val
      85             90             95

Val Lys Gly Met Gly Val Pro Trp Gln Val Ala Leu Gly Ala Val Phe
      100            105            110

Ile Ser Gly Leu Ile Phe Ile Leu Phe Ser Phe Phe Lys Val Arg Glu
      115            120            125

Met Leu Val Asn Ala Leu Pro Met Gly Leu Lys Met Ser Ile Ala Ala
      130            135            140

Gly Ile Gly Leu Phe Leu Ala Leu Ile Ser Leu Lys Gly Ala Gly Ile
      145            150            155            160

Ile Val Ala Asn Pro Ala Thr Leu Val Gly Leu Gly Asp Ile His Gln
      165            170            175

Pro Ser Ala Leu Leu Ala Leu Phe Gly Phe Ala Met Val Val Val Leu
      180            185            190

Gly His Phe Arg Val Gln Gly Ala Ile Ile Ile Thr Ile Leu Thr Ile

```

195 200 205
 Thr Val Ile Ala Ser Leu Met Gly Leu Asn Glu Phe His Gly Ile Ile
 210 215 220
 Gly Glu Val Pro Ser Ile Ala Pro Thr Phe Met Gln Met Asp Phe Glu
 225 230 235 240
 Gly Leu Phe Thr Val Ser Met Val Ser Val Ile Phe Val Phe Phe Leu
 245 250 255
 Val Asp Leu Phe Asp Ser Thr Gly Thr Leu Val Gly Ile Ser His Arg
 260 265 270
 Ala Gly Leu Leu Val Asp Gly Lys Leu Pro Arg Leu Lys Arg Ala Leu
 275 280 285
 Leu Ala Asp Ser Thr Ala Ile Val Ala Gly Ala Ala Leu Gly Thr Ser
 290 295 300
 Ser Thr Thr Pro Tyr Val Glu Ser Ala Ala Gly Val Ser Ala Gly Gly
 305 310 315 320
 Arg Thr Gly Leu Thr Ala Val Thr Val Gly Val Leu Met Leu Ala Cys
 325 330 335
 Leu Met Phe Ser Pro Leu Ala Lys Ser Val Pro Ala Phe Ala Thr Ala
 340 345 350
 Pro Ala Leu Leu Tyr Val Gly Thr Gln Met Leu Arg Ser Ala Arg Asp
 355 360 365
 Ile Asp Trp Asp Asp Met Thr Glu Ala Ala Pro Ala Phe Leu Thr Ile
 370 375 380
 Val Phe Met Pro Phe Thr Tyr Ser Ile Ala Asp Gly Ile Ala Phe Gly
 385 390 395 400
 Phe Ile Ser Tyr Ala Val Val Lys Leu Leu Cys Arg Arg Thr Lys Asp
 405 410 415
 Val Pro Pro Met Val Trp Ile Val Ala Val Leu Trp Ala Leu Lys Phe
 420 425 430
 Trp Tyr Leu Gly
 435

<210> 343

<211> 1311

<212> DNA

<213> Neisseria meningitidis

<400> 343

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 acggtgcgta ccgagttgat ggcgggtttg acaacttttt tgacgatgtg ctacatcggt 120
 atcgtcaacc ctctgatttt gggcgagacc ggcattggata tgggggcggt attcgtcgct 180

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acctgtatcg cgtctgccat cggctgtttt gttatgggtt ttgtcggcaa ctatccgatt 240
gcactcgcac cggggatggg gctgaatgcc tatttcacct ttgccgtcgt taagggtatg 300
ggcgtgccctt ggcaggttgc gttgggtgcg gtgttcatct ccggtctgat tttcatcctg 360
ttcagctttt ttaaagtcag ggaaatgctg gtcaacgcac tgcctatggg tttgaaaatg 420
tcgattgctg ccggtatcgg tttgtttttg gcaactgatt ccctgaaagg cgcaggcatt 480
atcgttgcca atccggcaac cttgggtcggc ttgggcgata ttcacagacc gtccgcgttg 540
ttggcactgt tcggttttgc catgggtggtc gtattgggac atttcgcgt tcaaggcgca 600
atcatcatca ccattttgac gattaccgtc attgccagcc tgatgggttt gaacgaattt 660
cacggcatca tcggcgaagt gccgagcatt gcgccgactt ttatgcagat ggattttaaa 720
gggttgttta ccgtcagcat ggtcagcgtg attttcgtct ttttcctagt cgatctgttc 780
gacagtaccg gaacactggt cgggtgtatcg catcgtgccg gactgctggt ggacggtaag 840
ctgccccgcc tgaaacgcgc actgcttgca gactctaccg ctattgtggc aggtgcggct 900
ttgggtactt cttcaaccac gccttatgtg gaaagtgcgg cgggcgtatc ggcaggcggg 960
cggacaggtc tgacggcggg taccgtcggc gtattgatgc tcgcctgcct gatgttttca 1020
cctttggcga aaagtgttcc cgtttttgcc accgcgcccg ccctgcttta tgtcggcacg 1080
cagatgctcc gcagtgcgag ggacatcgat tgggacgata tgacggaagc cgcaccgcga 1140
ttctgacca ttgtcttcat gccgtttacc tattcgattg cagacggcat cgctttcggc 1200
ttcatcagtt atgccgtggt taaactttta tgccgccgca ccaaagacgt tccgcctatg 1260
gtatggattg ttgcggtatt gtgggcactg aaattctggt atttgggctg a 1311

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<210> 344

<211> 436

<212> PRT

<213> *Neisseria meningitidis*

<400> 344

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Met Asp Thr Ser Lys Gln Thr Leu Leu Asp Gly Ile Phe Lys Leu Lys
  1             5             10            15

Ala Asn Gly Thr Thr Val Arg Thr Glu Leu Met Ala Gly Leu Thr Thr
 20             25            30

Phe Leu Thr Met Cys Tyr Ile Val Ile Val Asn Pro Leu Ile Leu Gly
 35             40            45

Glu Thr Gly Met Asp Met Gly Ala Val Phe Val Ala Thr Cys Ile Ala
 50             55            60

Ser Ala Ile Gly Cys Phe Val Met Gly Phe Val Gly Asn Tyr Pro Ile
 65             70            75            80

Ala Leu Ala Pro Gly Met Gly Leu Asn Ala Tyr Phe Thr Phe Ala Val
 85             90            95

Val Lys Gly Met Gly Val Pro Trp Gln Val Ala Leu Gly Ala Val Phe
100            105           110

Ile Ser Gly Leu Ile Phe Ile Leu Phe Ser Phe Phe Lys Val Arg Glu
115            120           125

Met Leu Val Asn Ala Leu Pro Met Gly Leu Lys Met Ser Ile Ala Ala
130            135           140

Gly Ile Gly Leu Phe Leu Ala Leu Ile Ser Leu Lys Gly Ala Gly Ile
145            150           155           160

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Ile	Val	Ala	Asn	Pro	Ala	Thr	Leu	Val	Gly	Leu	Gly	Asp	Ile	His	Gln	
				165					170						175	
Pro	Ser	Ala	Leu	Leu	Ala	Leu	Phe	Gly	Phe	Ala	Met	Val	Val	Val	Leu	
			180					185					190			
Gly	His	Phe	Arg	Val	Gln	Gly	Ala	Ile	Ile	Ile	Thr	Ile	Leu	Thr	Ile	
		195					200					205				
Thr	Val	Ile	Ala	Ser	Leu	Met	Gly	Leu	Asn	Glu	Phe	His	Gly	Ile	Ile	
	210					215					220					
Gly	Glu	Val	Pro	Ser	Ile	Ala	Pro	Thr	Phe	Met	Gln	Met	Asp	Phe	Lys	
225					230					235					240	
Gly	Leu	Phe	Thr	Val	Ser	Met	Val	Ser	Val	Ile	Phe	Val	Phe	Phe	Leu	
				245					250					255		
Val	Asp	Leu	Phe	Asp	Ser	Thr	Gly	Thr	Leu	Val	Gly	Val	Ser	His	Arg	
		260						265					270			
Ala	Gly	Leu	Leu	Val	Asp	Gly	Lys	Leu	Pro	Arg	Leu	Lys	Arg	Ala	Leu	
		275					280					285				
Leu	Ala	Asp	Ser	Thr	Ala	Ile	Val	Ala	Gly	Ala	Ala	Leu	Gly	Thr	Ser	
	290					295					300					
Ser	Thr	Thr	Pro	Tyr	Val	Glu	Ser	Ala	Ala	Gly	Val	Ser	Ala	Gly	Gly	
305					310					315					320	
Arg	Thr	Gly	Leu	Thr	Ala	Val	Thr	Val	Gly	Val	Leu	Met	Leu	Ala	Cys	
				325					330					335		
Leu	Met	Phe	Ser	Pro	Leu	Ala	Lys	Ser	Val	Pro	Ala	Phe	Ala	Thr	Ala	
			340					345					350			
Pro	Ala	Leu	Leu	Tyr	Val	Gly	Thr	Gln	Met	Leu	Arg	Ser	Ala	Arg	Asp	
		355					360					365				
Ile	Asp	Trp	Asp	Asp	Met	Thr	Glu	Ala	Ala	Pro	Ala	Phe	Leu	Thr	Ile	
	370					375					380					
Val	Phe	Met	Pro	Phe	Thr	Tyr	Ser	Ile	Ala	Asp	Gly	Ile	Ala	Phe	Gly	
385					390					395					400	
Phe	Ile	Ser	Tyr	Ala	Val	Val	Lys	Leu	Leu	Cys	Arg	Arg	Thr	Lys	Asp	
				405				410					415			
Val	Pro	Pro	Met	Val	Trp	Ile	Val	Ala	Val	Leu	Trp	Ala	Leu	Lys	Phe	
			420					425					430			
Trp	Tyr	Leu	Gly													
		435														

<210> 345

<211> 378

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 345

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ttgataccag tacagcagga tgctgccag gctggcgatc agtttgtcgg cgatgtcgcg 120
cgcttcgctg tcgggatggc ttctcgcttc gggatgaacg cagccgagca tggacacgcc 180
ggtacgcatt acgtccatcg gatgggtatg tgcaggcagg ctttccaaaa ctttaatcac 240
acggataggc aggccgcgca tggatttgag cttggtttta taagcggcca gctcgaattt 300
gttgggcaga tggccgtgaa tcagcaagtg tgcgacttct tcaaactcgc atttttgtgc 360
caaattagaa tgtcgtaa                                     378
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<210> 346

<211> 125

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 346

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Met Thr Ala Asp Gly Leu Phe Val Ala Phe Asn Phe Asn Thr Phe Ala
  1           5           10          15

Val Val Arg Ile Leu Ile Pro Val Gln Gln Asp Ala Ala Gln Ala Gly
          20          25          30

Asp Gln Phe Val Gly Asp Val Ala Arg Phe Ala Val Gly Met Ala Phe
          35          40          45

Ala Phe Gly Met Asn Ala Ala Glu His Gly His Ala Gly Thr His His
          50          55          60

Val His Arg Met Gly Met Cys Arg Gln Ala Phe Gln Asn Phe Asn His
          65          70          75          80

Thr Asp Arg Gln Ala Ala His Gly Phe Glu Leu Gly Phe Ile Ser Gly
          85          90          95

Gln Leu Glu Phe Val Gly Gln Met Ala Val Asn Gln Gln Val Cys Asp
          100         105         110

Phe Phe Lys Leu Ala Phe Leu Cys Gln Ile Arg Met Ser
          115         120         125
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<210> 347

<211> 378

<212> DNA

<213> *Neisseria meningitidis*

<400> 347

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cgcttcactt tccggatggc ttctacgttc aggatgaacg cagcccagca tggatacggc 180
ggtacgcatt acgtccatcg gatgggtatg tgcaggcagg ctttccaaaa ctttaatcac 240
acggataggc aggccgcgca tggatttgag cttggtttta taagcggcca gctcgaattt 300
gttgggcaga tggccgtgaa tcagcaggtg ggcgacttct tcaaactcgc atttttgtgc 360
caaatcagaa tgtcgtaa                                     378
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<210> 348
 <211> 125
 <212> PRT
 <213> Neisseria meningitidis

<400> 348
 Met Thr Ala Asp Gly Leu Phe Val Ala Phe Asn Leu Asn Ala Phe Ala
 1 5 10 15
 Val Val Arg Ile Leu Ile Pro Val Gln Glu Asp Ala Ala Glu Ala Gly
 20 25 30
 Asp Gln Phe Val Gly Asp Val Ala Arg Phe Thr Phe Arg Met Ala Phe
 35 40 45
 Thr Phe Arg Met Asn Ala Ala Gln His Gly Tyr Ala Gly Thr His Tyr
 50 55 60
 Val His Arg Met Gly Met Cys Arg Gln Ala Phe Gln Asn Phe Asn His
 65 70 75 80
 Thr Asp Arg Gln Ala Ala His Gly Phe Glu Leu Gly Phe Ile Ser Gly
 85 90 95
 Gln Leu Glu Phe Val Gly Gln Met Ala Val Asn Gln Gln Val Gly Asp
 100 105 110
 Phe Phe Lys Leu Ala Phe Leu Cys Gln Ile Arg Met Ser
 115 120 125

<210> 349
 <211> 378
 <212> DNA
 <213> Neisseria meningitidis

<400> 349
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 ttgataccag tacaagagga tgctgccgag gctggcgatc agtttgtcgg cgatgtcgcg 120
 cgcttcactt tccggatggc ttccacgttc aggatgaacg cagcccagca tggatacgcc 180
 ggtaacgatt acgtccatcg gatgggtatg tgcaggcagg ctttccaaaa cttaatacac 240
 acggataggc aggccgcgca tggatttgag cttggtttta taagcggcca gtcgaattt 300
 gttgggcaga tggccgtgaa tcagcaggtg ggcgacttct tcaaactcgc atttttgtgc 360
 caaatcagaa tgcgtaa 378

<210> 350
 <211> 125
 <212> PRT
 <213> Neisseria meningitidis

<400> 350
 Met Thr Ala Asp Gly Leu Phe Val Ala Phe Asn Leu Asn Ala Phe Ala
 1 5 10 15

Val Val Arg Ile Leu Ile Pro Val Gln Glu Asp Ala Ala Glu Ala Gly
20 25 30

Asp Gln Phe Val Gly Asp Val Ala Arg Phe Thr Phe Arg Met Ala Phe
35 40 45

Thr Phe Arg Met Asn Ala Ala Gln His Gly Tyr Ala Gly Thr His Tyr
50 55 60

Val His Arg Met Gly Met Cys Arg Gln Ala Phe Gln Asn Phe Asn His
65 70 75 80

Thr Asp Arg Gln Ala Ala His Gly Phe Glu Leu Gly Phe Ile Ser Gly
85 90 95

Gln Leu Glu Phe Val Gly Gln Met Ala Val Asn Gln Gln Val Gly Asp
100 105 110

Phe Phe Lys Leu Ala Phe Leu Cys Gln Ile Arg Met Ser
115 120 125

<210> 351

<211> 1920

<212> DNA

<213> Neisseria gonorrhoeae

<400> 351

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aaacggcagg cgggcat tac tgccacagac atcgtgttg cactgaccga attcttgct 120
aaagagcgcg tggcggggc gtttgcgaa ttttgcggc agggcgcgag aagcctgtct 180
atcgcgacac ggcgaccat ttccaacatg acgcggagt tcggcgcgac tgccgccatg 240
ttcgccatcg acgcgcaaac tattgattat ttgaaactga ccggacgtga cgacgcgcag 300
gtgaaattgg tggaaacct cgcacaaacc gcaggcttat gggcagggtg cttgaaaacc 360
gcggtttatc cgcgcgtttt gaaatttgat ttgagcagcg taacgcgcaa tatggcaggc 420
ccgagcaacc cgcacgcgcg ttttgccacc gccgatttg cggcgaaagg gctggcgaag 480
ccttacgaag agccttcaga cggccaaatg cctgacgggtg cagtgtattat tgccgcgatt 540
acttcgtgta ccaatacttc caaccgcgc aacgttgtcg ccgcgcact gttggcacgc 600
aatgccaaac gcctgcgctt gaaacgcaaa ccttgggtga aatcttcgtt tgcccgggt 660
tcaaaagtag ccggaatcta ttgaaagaa gcaggcttg tgcccgaaat ggaaaaactc 720
ggcttcggtg tcgtgcctt cgcgtgtacc acctgtaacg gcatgagcgg cgcgctcgac 780
ccgaaaatcc aacaagaaat catcgaccgc gatttgtacg ccaccgccgt attgtcaggc 840
aaccgcaact tcgacggcgc tatccatccg tatgcgaaac aggttttctt cgcttcgcct 900
cctttggtcg ttgcctacgc attggcaggc agcatccgtt tcgatattga aaacgacgta 960
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atgtccgaca ccggcacagc gcaaaaagca ccaagccgcg gtacgactg gcgaccgatg 1140
tccacctaca tccgcggtcc gccctattgg gaaggcgcac tggcagggga acgtacatta 1200
agaggtatgc gtcgcgcgcg gattttgccc gacaacatca ccaccgacca catctcgcca 1260
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gaagaagact tcaactctta cgcaaccac cgcgcgacc acttgaccgc ccaacgcgca 1380
accttcgcca atccgaaact gtttaacgaa atggtgagaa acgaagacgg cagcgtacgc 1440
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gaaacctata tgaaccgcaa acagccgctt atcatcattg ccggtgcgga ctatggtcaa 1560
ggctcaagcc gcgactgggc ggcgaagggc gtgcggctg cggtgtgga agccatcgcc 1620
gccgaagggt tcgagcgcat ccaccgcacc aacctcatcg gcatggcggt cttgccgctg 1680
caattcaaac ccggcaccaa ccgccatacc ctgcaactgg acggtacgga aacctacgac 1740

gttgctggcg aacgcacacc gcgctgcggc ctgaccctcg tgattcaccg taaaaacgga 1800
gaaaccgtcg aagttccggt tacctgccgc cccgataccg cagaagaagc attggtatat 1860
gaagccggcg gcgtattgca acggtttgca caggactttt tggaaggga cgcggcttag 1920

<210> 352

<211> 639

<212> PRT

<213> Neisseria gonorrhoeae

<400> 352

Met	Leu	Gly	Arg	Ala	Ser	Met	Met	Arg	Leu	Pro	Asp	Ile	Val	Gly	Val	
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Glu	Leu	Thr	Gly	Lys	Arg	Gln	Ala	Gly	Ile	Thr	Ala	Thr	Asp	Ile	Val	
			20					25					30			
Leu	Ala	Leu	Thr	Glu	Phe	Leu	Arg	Lys	Glu	Arg	Val	Val	Gly	Ala	Phe	
		35					40					45				
Val	Glu	Phe	Phe	Gly	Glu	Gly	Ala	Arg	Ser	Leu	Ser	Ile	Gly	Asp	Arg	
	50					55					60					
Ala	Thr	Ile	Ser	Asn	Met	Thr	Pro	Glu	Phe	Gly	Ala	Thr	Ala	Ala	Met	
65					70					75					80	
Phe	Ala	Ile	Asp	Ala	Gln	Thr	Ile	Asp	Tyr	Leu	Lys	Leu	Thr	Gly	Arg	
				85					90					95		
Asp	Asp	Ala	Gln	Val	Lys	Leu	Val	Glu	Thr	Tyr	Ala	Lys	Thr	Ala	Gly	
			100					105					110			
Leu	Trp	Ala	Gly	Gly	Leu	Lys	Thr	Ala	Val	Tyr	Pro	Arg	Val	Leu	Lys	
	115					120						125				
Phe	Asp	Leu	Ser	Ser	Val	Thr	Arg	Asn	Met	Ala	Gly	Pro	Ser	Asn	Pro	
130						135					140					
His	Ala	Arg	Phe	Ala	Thr	Ala	Asp	Leu	Ala	Ala	Lys	Gly	Leu	Ala	Lys	
145					150					155					160	
Pro	Tyr	Glu	Glu	Pro	Ser	Asp	Gly	Gln	Met	Pro	Asp	Gly	Ala	Val	Ile	
				165					170					175		
Ile	Ala	Ala	Ile	Thr	Ser	Cys	Thr	Asn	Thr	Ser	Asn	Pro	Arg	Asn	Val	
			180					185					190			
Val	Ala	Ala	Ala	Leu	Leu	Ala	Arg	Asn	Ala	Asn	Arg	Leu	Gly	Leu	Lys	
		195					200					205				
Arg	Lys	Pro	Trp	Val	Lys	Ser	Ser	Phe	Ala	Pro	Gly	Ser	Lys	Val	Ala	
	210					215					220					
Gly	Ile	Tyr	Leu	Lys	Glu	Ala	Gly	Leu	Leu	Pro	Glu	Met	Glu	Lys	Leu	
225				230						235					240	
Gly	Phe	Gly	Ile	Val	Ala	Phe	Ala	Cys	Thr	Thr	Cys	Asn	Gly	Met	Ser	

245

250

255

Gly Ala Leu Asp Pro Lys Ile Gln Gln Glu Ile Ile Asp Arg Asp Leu
260 265 270

Tyr Ala Thr Ala Val Leu Ser Gly Asn Arg Asn Phe Asp Gly Arg Ile
275 280 285

His Pro Tyr Ala Lys Gln Ala Phe Leu Ala Ser Pro Pro Leu Val Val
290 295 300

Ala Tyr Ala Leu Ala Gly Ser Ile Arg Phe Asp Ile Glu Asn Asp Val
305 310 315 320

Leu Gly Val Ala Asp Gly Arg Glu Ile Arg Leu Lys Asp Ile Trp Pro
325 330 335

Thr Asp Glu Glu Ile Asp Ala Ile Val Ala Glu Tyr Val Lys Pro Gln
340 345 350

Gln Phe Arg Asp Ile Tyr Ile Pro Met Ser Asp Thr Gly Thr Ala Gln
355 360 365

Lys Ala Pro Ser Pro Leu Tyr Asp Trp Arg Pro Met Ser Thr Tyr Ile
370 375 380

Arg Arg Pro Pro Tyr Trp Glu Gly Ala Leu Ala Gly Glu Arg Thr Leu
385 390 395 400

Arg Gly Met Arg Pro Pro Ala Ile Leu Pro Asp Asn Ile Thr Thr Asp
405 410 415

His Ile Ser Pro Ser Asn Ala Ile Leu Ala Gly Ser Ala Ala Gly Glu
420 425 430

Tyr Leu Ala Lys Met Gly Leu Pro Glu Glu Asp Phe Asn Ser Tyr Ala
435 440 445

Thr His Arg Gly Asp His Leu Thr Ala Gln Arg Ala Thr Phe Ala Asn
450 455 460

Pro Lys Leu Phe Asn Glu Met Val Arg Asn Glu Asp Gly Ser Val Arg
465 470 475 480

Gln Gly Ser Leu Ala Arg Val Glu Pro Glu Gly Gln Thr Met Arg Met
485 490 495

Trp Glu Ala Ile Glu Thr Tyr Met Asn Arg Lys Gln Pro Leu Ile Ile
500 505 510

Ile Ala Gly Ala Asp Tyr Gly Gln Gly Ser Ser Arg Asp Trp Ala Ala
515 520 525

Lys Gly Val Arg Leu Ala Gly Val Glu Ala Ile Ala Ala Glu Gly Phe
530 535 540

Glu Arg Ile His Arg Thr Asn Leu Ile Gly Met Gly Val Leu Pro Leu

545 550 555 560
 Gln Phe Lys Pro Gly Thr Asn Arg His Thr Leu Gln Leu Asp Gly Thr
 565 570 575
 Glu Thr Tyr Asp Val Val Gly Glu Arg Thr Pro Arg Cys Gly Leu Thr
 580 585 590
 Leu Val Ile His Arg Lys Asn Gly Glu Thr Val Glu Val Pro Val Thr
 595 600 605
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 610 615 620
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 625 630 635

<210> 353
 <211> 1920
 <212> DNA
 <213> Neisseria meningitidis

<400> 353
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 ggcttcggta tcgtgcgctt cgctgcacc acctgcaacg gcatgagtgg cgcgctggat 780
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<211> 639
<212> PRT
<213> Neisseria meningitidis

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35 40 45
Val Glu Phe Phe Gly Glu Gly Ala Arg Ser Leu Ser Ile Gly Asp Arg
50 55 60
Ala Thr Ile Ser Asn Met Thr Pro Glu Phe Gly Ala Thr Ala Ala Met
65 70 75 80
Phe Ala Ile Asp Glu Gln Thr Ile Asp Tyr Leu Lys Leu Thr Gly Arg
85 90 95
Asp Asp Ala Gln Val Lys Leu Val Glu Thr Tyr Ala Lys Thr Ala Gly
100 105 110
Leu Trp Ala Asp Ala Leu Lys Thr Ala Val Tyr Pro Arg Val Leu Lys
115 120 125
Phe Asp Leu Ser Ser Val Thr Arg Asn Met Ala Gly Pro Ser Asn Pro
130 135 140
His Ala Arg Phe Ala Thr Ala Asp Leu Ala Ala Lys Gly Leu Ala Lys
145 150 155 160
Pro Tyr Glu Glu Pro Ser Asp Gly Gln Met Pro Asp Gly Ser Val Ile
165 170 175
Ile Ala Ala Ile Thr Ser Cys Thr Asn Thr Ser Asn Pro Arg Asn Val
180 185 190
Val Ala Ala Ala Leu Leu Ala Arg Asn Ala Asn Arg Leu Gly Leu Lys
195 200 205
Arg Lys Pro Trp Val Lys Ser Ser Phe Ala Pro Gly Ser Lys Val Ala
210 215 220
Glu Ile Tyr Leu Lys Glu Ala Gly Leu Leu Pro Glu Met Glu Lys Leu
225 230 235 240
Gly Phe Gly Ile Val Ala Phe Ala Cys Thr Thr Cys Asn Gly Met Ser
245 250 255
Gly Ala Leu Asp Pro Lys Ile Gln Lys Glu Ile Ile Asp Arg Asp Leu

260	265	270
Tyr Ala Thr Ala Val Leu Ser Gly Asn Arg Asn Phe Asp Gly Arg Ile 275 280 285		
His Pro Tyr Ala Lys Gln Ala Phe Leu Ala Ser Pro Pro Leu Val Val 290 295 300		
Ala Tyr Ala Leu Ala Gly Ser Ile Arg Phe Asp Ile Glu Asn Asp Val 305 310 315 320		
Leu Gly Val Ala Asp Gly Lys Glu Ile Arg Leu Lys Asp Ile Trp Pro 325 330 335		
Ala Asp Glu Glu Ile Asp Ala Val Val Ala Glu Tyr Val Lys Pro Gln 340 345 350		
Gln Phe Arg Asp Val Tyr Val Pro Met Phe Asp Thr Gly Thr Ala Gln 355 360 365		
Lys Ala Pro Ser Pro Leu Tyr Asp Trp Arg Pro Met Ser Thr Tyr Ile 370 375 380		
Arg Arg Pro Pro Tyr Trp Glu Gly Ala Leu Ala Gly Glu Arg Thr Leu 385 390 395 400		
Arg Gly Met Arg Pro Leu Ala Ile Leu Pro Asp Asn Ile Thr Thr Asp 405 410 415		
His Leu Ser Pro Ser Asn Ala Ile Leu Ala Val Ser Ala Ala Gly Glu 420 425 430		
Tyr Leu Ala Lys Met Gly Leu Pro Glu Glu Asp Phe Asn Ser Tyr Ala 435 440 445		
Thr His Arg Gly Asp His Leu Thr Ala Gln Arg Ala Thr Phe Ala Asn 450 455 460		
Pro Lys Leu Phe Asn Glu Met Val Lys Asn Glu Asp Gly Ser Val Arg 465 470 475 480		
Gln Gly Ser Phe Ala Arg Val Glu Pro Glu Gly Glu Thr Met Arg Met 485 490 495		
Trp Glu Ala Ile Glu Thr Tyr Met Asn Arg Lys Gln Pro Leu Ile Ile 500 505 510		
Ile Ala Gly Ala Asp Tyr Gly Gln Gly Ser Ser Arg Asp Trp Ala Ala 515 520 525		
Lys Gly Val Arg Leu Ala Gly Val Glu Ala Ile Val Ala Glu Gly Phe 530 535 540		
Glu Arg Ile His Arg Thr Asn Leu Ile Gly Met Gly Val Leu Pro Leu 545 550 555 560		

Gln Phe Lys Pro Asp Thr Asn Arg His Thr Leu Gln Leu Asp Gly Thr
565 570 575

Glu Thr Tyr Asp Val Val Gly Glu Arg Thr Pro Arg Cys Asp Leu Thr
580 585 590

Leu Val Ile His Arg Lys Asn Gly Glu Thr Val Glu Val Pro Val Thr
595 600 605

Cys Cys Leu Asp Thr Ala Glu Glu Val Leu Val Tyr Glu Ala Gly Gly
610 615 620

Val Leu Gln Arg Phe Ala Gln Asp Phe Leu Glu Gly Asn Ala Ala
625 630 635

<210> 355

<211> 1920

<212> DNA

<213> Neisseria meningitidis

<400> 355

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ccgagcaacc cgcacgcgcg ttttgcgacc gccgatttgg ccggcaaagg cttggctaaa 480
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<210> 356

<211> 639
<212> PRT
<213> Neisseria meningitidis

<400> 356

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35 40 45
Val Glu Phe Phe Gly Glu Gly Ala Arg Ser Leu Ser Ile Gly Asp Arg
50 55 60
Ala Thr Ile Ser Asn Met Thr Pro Glu Phe Gly Ala Thr Ala Ala Met
65 70 75 80
Phe Ala Ile Asp Glu Gln Thr Ile Asp Tyr Leu Lys Leu Thr Gly Arg
85 90 95
Asp Asp Ala Gln Val Lys Leu Val Glu Thr Tyr Ala Lys Thr Ala Gly
100 105 110
Leu Trp Ala Asp Ala Leu Lys Thr Ala Val Tyr Pro Arg Val Leu Lys
115 120 125
Phe Asp Leu Ser Ser Val Thr Arg Asn Met Ala Gly Pro Ser Asn Pro
130 135 140
His Ala Arg Phe Ala Thr Ala Asp Leu Ala Gly Lys Gly Leu Ala Lys
145 150 155 160
Pro Tyr Glu Glu Pro Ser Asp Gly Gln Met Pro Asp Gly Ala Val Ile
165 170 175
Ile Ala Ala Ile Thr Ser Cys Thr Asn Thr Ser Asn Pro Arg Asn Val
180 185 190
Val Ala Ala Ala Leu Leu Ala Arg Asn Ala Asn Arg Leu Gly Leu Gln
195 200 205
Arg Lys Pro Trp Val Lys Ser Ser Phe Ala Pro Gly Ser Lys Val Ala
210 215 220
Glu Ile Tyr Leu Lys Glu Ala Asp Leu Leu Pro Glu Met Glu Lys Leu
225 230 235 240
Gly Phe Gly Ile Val Ala Phe Ala Cys Thr Thr Cys Asn Gly Met Ser
245 250 255
Gly Ala Leu Asp Pro Lys Ile Gln Lys Glu Ile Ile Asp Arg Asp Leu
260 265 270
Tyr Ala Thr Ala Val Leu Ser Gly Asn Arg Asn Phe Asp Gly Arg Ile

275	280	285
His Pro Tyr Ala Lys Gln Ala Phe Leu Ala Ser Pro Pro Leu Val Val 290 295 300		
Ala Tyr Ala Leu Ala Gly Ser Ile Arg Phe Asp Ile Glu Asn Asp Val 305 310 315 320		
Leu Gly Val Ala Asp Gly Lys Glu Ile Arg Leu Lys Asp Ile Trp Pro 325 330 335		
Thr Asp Glu Glu Ile Asp Ala Ile Val Ala Glu Tyr Val Lys Pro Gln 340 345 350		
Gln Phe Arg Asp Val Tyr Ile Pro Met Phe Asp Thr Gly Thr Ala Gln 355 360 365		
Lys Ala Pro Ser Pro Leu Tyr Asp Trp Arg Pro Met Ser Thr Tyr Ile 370 375 380		
Arg Arg Pro Pro Tyr Trp Glu Gly Ala Leu Ala Gly Glu Arg Thr Leu 385 390 395 400		
Ser Gly Met Arg Pro Leu Ala Ile Leu Pro Asp Asn Ile Thr Thr Asp 405 410 415		
His Leu Ser Pro Ser Asn Ala Ile Leu Ala Ser Ser Ala Ala Gly Glu 420 425 430		
Tyr Leu Ala Lys Met Gly Leu Pro Glu Glu Asp Phe Asn Ser Tyr Ala 435 440 445		
Thr His Arg Gly Asp His Leu Thr Ala Gln Arg Ala Thr Phe Ala Asn 450 455 460		
Pro Lys Leu Phe Asn Glu Met Val Arg Asn Glu Asp Gly Ser Val Arg 465 470 475 480		
Gln Gly Ser Leu Ala Arg Val Glu Pro Glu Gly Gln Thr Met Arg Met 485 490 495		
Trp Glu Ala Ile Glu Thr Tyr Met Asn Arg Lys Gln Pro Leu Ile Ile 500 505 510		
Ile Ala Gly Ala Asp Tyr Gly Gln Gly Ser Ser Arg Asp Trp Ala Ala 515 520 525		
Lys Gly Val Arg Leu Ala Gly Val Glu Ala Ile Val Ala Glu Gly Phe 530 535 540		
Glu Arg Ile His Arg Thr Asn Leu Ile Gly Met Gly Val Leu Pro Leu 545 550 555 560		
Gln Phe Lys Pro Gly Thr Asn Arg His Thr Leu Gln Leu Asp Gly Thr 565 570 575		
Glu Thr Tyr Asp Val Val Gly Glu Arg Thr Pro Arg Cys Asp Leu Thr		

580

585

590

Leu Val Ile His Arg Lys Asn Gly Glu Thr Val Glu Val Pro Ile Thr
 595 600 605

Cys Arg Leu Asp Thr Ala Glu Glu Val Leu Val Tyr Glu Ala Gly Gly
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Val Leu Gln Arg Phe Ala Gln Asp Phe Leu Glu Gly Asn Ala Ala
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<210> 357

<211> 1245

<212> DNA

<213> Neisseria gonorrhoeae

<400> 357

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<210> 358

<211> 414

<212> PRT

<213> Neisseria gonorrhoeae

<400> 358

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Gly Lys Val Ile Gly Ala Gly Met Phe Pro Asn Pro Thr Ala Asn Leu
 20 25 30

Gly Asp Gly Leu Ile Gly Ser Leu Ile Val Leu Leu Tyr Thr Trp Phe
 35 40 45

Pro Phe Ser Ser Gly Ala Leu Met Ile Leu Glu Val Asn Thr His Asn

50

55

60

Pro Arg Gly Ala Ser Phe Asp Thr Met Val Lys Asp Leu Leu Gly Arg
65 70 75 80

Gly Trp Asn Ile Ile Asn Gly Ile Ala Val Ala Leu Val Leu Tyr Gly
85 90 95

Ser Thr Tyr Ala Tyr Ile Leu Val Gly Gly Asp Leu Thr Ala Lys Gly
100 105 110

Ile Gly Ser Ala Val Gly Gly Lys Ile Ser Leu Thr Val Gly Gln Leu
115 120 125

Val Phe Phe Gly Ile Leu Ala Phe Cys Val Trp Ala Ser Ala Arg Leu
130 135 140

Val Asp Arg Phe Thr Gly Val Leu Ile Gly Gly Met Val Leu Thr Phe
145 150 155 160

Ile Trp Ala Thr Gly Gly Leu Val Ala Asp Ala Lys Pro Ser Val Leu
165 170 175

Phe Asp Thr Gln Ala Pro Val Gly Thr Gly Tyr Trp Ile Tyr Ala Ala
180 185 190

Thr Ala Leu Pro Val Cys Leu Ala Ser Phe Gly Phe His Gly Asn Val
195 200 205

Ser Ser Leu Leu Lys Tyr Phe Lys Gly Asp Ala Pro Lys Val Ala Lys
210 215 220

Ser Ile Trp Ala Gly Thr Leu Val Ala Leu Val Ile Tyr Val Leu Trp
225 230 235 240

Gln Thr Ala Ile Gln Ser Asn Leu Pro Arg Asn Glu Phe Ala Pro Val
245 250 255

Ile Ala Ala Glu Arg Gln Leu Ser Val Leu Asn Glu Thr Leu Ser Lys
260 265 270

Phe Ala Gln Thr Gly Asp Met Asp Lys Ile Leu Ser Leu Phe Pro Tyr
275 280 285

Met Ala Ile Ala Thr Ser Phe Leu Gly Val Thr Leu Gly Leu Phe Asp
290 295 300

Asn Ile Ala Asp Ile Phe Lys Trp Asn Asp Ser Met Ser Gly Arg Gly
305 310 315 320

Thr Lys Thr Val Ala Leu Asn Phe Leu Pro Pro Leu Ile Ser Trp Leu
325 330 335

Leu Leu Pro Thr Gly Phe Phe Thr Ala Ile Gly Ala Ser Gly Leu Ala
340 345 350

Ala Thr Val Trp Asp Gln Gly Ile Ile Pro Ala Met Leu Leu Tyr Val

355 360 365
 Ser Pro Gln Lys Ile Gly Ala Gly Lys Thr Tyr Lys Val Tyr Gly Gly
 370 375 380
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 405 410

<210> 359
 <211> 1242
 <212> DNA
 <213> Neisseria meningitidis

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 <212> PRT
 <213> Neisseria meningitidis

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 35 40 45
 Ser Met Leu Ser Ser Gly Leu Met Ile Leu Glu Val Asn Thr His Tyr

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Gly Trp Asn Ile Ile Asn Gly Ile Ala Val Ala Phe Val Leu Tyr Leu 85 90 95		
Leu Thr Tyr Ala Tyr Ile Phe Val Gly Gly Asp Leu Thr Ala Lys Gly 100 105 110		
Leu Gly Ser Ala Ala Gly Gly Asp Val Ser Leu Thr Val Gly Gln Leu 115 120 125		
Val Phe Phe Gly Ile Leu Ala Phe Cys Val Trp Ala Ser Ala Arg Leu 130 135 140		
Val Asp Arg Phe Thr Gly Val Leu Ile Gly Gly Met Val Leu Thr Phe 145 150 155 160		
Ile Trp Ala Ala Gly Gly Leu Ile Ala Asp Ala Lys Pro Ser Val Leu 165 170 175		
Phe Asp Thr Gln Ala Pro Ala Gly Thr Asn Tyr Trp Ile Tyr Ala Ala 180 185 190		
Thr Ala Leu Pro Val Cys Leu Ala Ser Phe Gly Phe His Gly Asn Val 195 200 205		
Ser Ser Leu Leu Lys Tyr Phe Lys Gly Asp Ala Pro Lys Val Ala Lys 210 215 220		
Ser Ile Trp Thr Gly Thr Leu Ile Ala Leu Val Ile Tyr Val Leu Trp 225 230 235 240		
Gln Thr Ala Ile Gln Gly Asn Leu Pro Arg Asn Glu Phe Ala Pro Val 245 250 255		
Ile Ala Ala Glu Gly Gln Val Ser Val Leu Ile Glu Thr Leu Ser Lys 260 265 270		
Phe Ala Gln Thr Gly Asn Met Asp Lys Ile Leu Ser Leu Phe Ser Tyr 275 280 285		
Met Ala Ile Ala Thr Ser Phe Leu Gly Val Thr Leu Gly Leu Phe Asp 290 295 300		
Tyr Ile Ala Asp Ile Phe Lys Trp Asn Asp Ser Ile Ser Gly Arg Thr 305 310 315 320		
Lys Thr Ala Ala Leu Thr Phe Leu Pro Pro Leu Ile Ser Cys Leu Leu 325 330 335		
Phe Pro Thr Gly Phe Val Thr Ala Ile Gly Tyr Val Gly Leu Ala Ala 340 345 350		
Thr Val Trp Thr Gly Ile Ile Pro Ala Met Leu Leu Tyr Arg Ser Arg		

355 360 365
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 370 375 380
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 385 390 395 400
 Val Leu Ser Gln Met Glu Leu Val Pro Val Phe Lys Gly
 405 410

<210> 361
 <211> 1242
 <212> DNA
 <213> *Neisseria meningitidis*

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 gtttcaactca ccgtcggaca actcgtcttc ttccgcattc tcgccttttg cgtatgggca 420
 tccgcacgct tggtcgaccg attcaccagc gtccctcatg gcggcatggt attaaccttt 480
 atttgggcaa ccggcggcct gattgccgat gccaaactgc ccgtcctctt cgacacccaa 540
 gccctaccg gcaccaacta ctggatttat gtccgccacg ccctgcccggt ctgccttgcg 600
 tcattcgggt tccacggcaa cgtctccagc ctgctcaaact actttaagg cgacgcgcc 660
 aaagtggcta aatccatctg gacgggcaca ctgattgcgc tggtaattta cgtcctctgg 720
 caaacggcca tccaangcaa cctgcgcgcg aacgagttcg ccccgatgat tgccgccgaa 780
 gggcaagtct ccgtentgat tgaaccctg tccaaattcg cccaaaccgg caatatggac 840
 aaaatattgt ccctgttttc ctatatggcg atcgccacct cgttttttagg cgtaacgctc 900
 ggactcttcg actacatcgc cgacatcttc aaatggaacg acagcgtgct cggccgcacc 960
 aaaaccgccc cgctgacctt cctgcgcgct ntaatttctt gcctgctctt cccaccggc 1020
 tttgttacgg ccacggnata cgtcggcctg gcggcaaccg tctggacagg catcatcccc 1080
 gccatgctgc tntaccgttc gcgcaaaaaa ttccggcgag gcaaaacctt taaagtttac 1140
 ggcggcttgt ggctgatggt ttgggtcttc cttttcgga tcntcaacat cgcgcgacan 1200
 gtattgagcc aatggaact cgtccccgta tttaaaggat aa 1242

<210> 362
 <211> 413
 <212> PRT
 <213> *Neisseria meningitidis*

<400> 362
 Met Pro Thr Lys Thr Pro Ser Leu Phe Gly Gly Ala Met Ile Ile Ala
 1 5 10 15
 Gly Thr Xaa Ile Gly Ala Gly Met Leu Ala Asn Pro Thr Ala Thr Ser
 20 25 30
 Gly Val Trp Phe Thr Gly Ser Leu Ala Val Leu Leu Tyr Thr Trp Phe
 35 40 45
 Ser Met Leu Ser Ser Gly Leu Met Ile Leu Glu Val Asn Thr His Tyr

50					55					60							
Pro	His	Gly	Ala	Xaa	Phe	Asp	Thr	Met	Val	Lys	Asp	Leu	Leu	Gly	Arg		
65					70					75					80		
Ser	Trp	Asn	Ile	Ile	Asn	Gly	Ile	Ala	Val	Ala	Phe	Val	Leu	Tyr	Leu		
				85					90					95			
Leu	Thr	Tyr	Ala	Tyr	Ile	Phe	Val	Gly	Gly	Asp	Leu	Thr	Ala	Lys	Gly		
			100					105					110				
Leu	Gly	Ser	Ala	Ala	Gly	Gly	Asn	Val	Ser	Leu	Thr	Val	Gly	Gln	Leu		
		115					120					125					
Val	Phe	Phe	Gly	Ile	Leu	Ala	Phe	Cys	Val	Trp	Ala	Ser	Ala	Arg	Leu		
	130					135					140						
Val	Asp	Arg	Phe	Thr	Ser	Val	Leu	Ile	Gly	Gly	Met	Val	Leu	Thr	Phe		
145					150					155					160		
Ile	Trp	Ala	Thr	Gly	Gly	Leu	Ile	Ala	Asp	Ala	Lys	Leu	Pro	Val	Leu		
				165					170					175			
Phe	Asp	Thr	Gln	Ala	Pro	Thr	Gly	Thr	Asn	Tyr	Trp	Ile	Tyr	Val	Ala		
			180					185					190				
Thr	Ala	Leu	Pro	Val	Cys	Leu	Ala	Ser	Phe	Gly	Phe	His	Gly	Asn	Val		
	195					200						205					
Ser	Ser	Leu	Leu	Lys	Tyr	Phe	Lys	Gly	Asp	Ala	Pro	Lys	Val	Ala	Lys		
	210					215					220						
Ser	Ile	Trp	Thr	Gly	Thr	Leu	Ile	Ala	Leu	Val	Ile	Tyr	Val	Leu	Trp		
225					230					235				240			
Gln	Thr	Ala	Ile	Gln	Xaa	Asn	Leu	Pro	Arg	Asn	Glu	Phe	Ala	Pro	Val		
				245					250				255				
Ile	Ala	Ala	Glu	Gly	Gln	Val	Ser	Val	Xaa	Ile	Glu	Thr	Leu	Ser	Lys		
			260					265					270				
Phe	Ala	Gln	Thr	Gly	Asn	Met	Asp	Lys	Ile	Leu	Ser	Leu	Phe	Ser	Tyr		
	275					280						285					
Met	Ala	Ile	Ala	Thr	Ser	Phe	Leu	Gly	Val	Thr	Leu	Gly	Leu	Phe	Asp		
	290					295					300						
Tyr	Ile	Ala	Asp	Ile	Phe	Lys	Trp	Asn	Asp	Ser	Val	Ser	Gly	Arg	Thr		
305					310					315				320			
Lys	Thr	Ala	Ala	Leu	Thr	Phe	Leu	Pro	Pro	Xaa	Ile	Ser	Cys	Leu	Leu		
					325					330				335			
Phe	Pro	Thr	Gly	Phe	Val	Thr	Ala	Ile	Gly	Tyr	Val	Gly	Leu	Ala	Ala		
			340					345					350				

Thr Val Trp Thr Gly Ile Ile Pro Ala Met Leu Leu Tyr Arg Ser Arg
 355 360 365

Lys Lys Phe Gly Ala Gly Lys Thr Tyr Lys Val Tyr Gly Gly Leu Trp
 370 375 380

Leu Met Val Trp Val Phe Leu Phe Gly Ile Xaa Asn Ile Ala Ala Xaa
 385 390 395 400

Val Leu Ser Gln Met Glu Leu Val Pro Val Phe Lys Gly
 405 410

<210> 363

<211> 870

<212> DNA

<213> Neisseria gonorrhoeae

<400> 363

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atgtccgcag aaacatacac acaaatcggc tgggtaggct tagggcaaat gggctctgcct 60
atggtaacgc ggctcttgga cggcggcatc gaagtcggcg tatacaaccg ctgccccgac 120
aaaactgccc ccctctccgc caaaggagca aaagtttacg gcagcaccgc cgaactcgtc 180
cgcgcctgcc ccgtcatctt cctgatggtt tccgactatg ccgccgtgtg cgacatcctg 240
aacggagtcc gcgacggatt ggccggcaaa atcatcgta acatgagcac catctccccg 300
accgaaaacc tcgccgtcaa agcacttgct gaagccgcag gcggacagtt tgccgaagca 360
cccgtttccg gatcggtcgg acccgccacc aacggcacac tgctgattct gttcggcggc 420
agcgaagccg ttttaaaccc gctgcaaaaa atattttccc ttgtcggcaa aaaaaccttc 480
catttcggcg atgtcggcaa aggctcgggc gcgaaactcg tcttgaactc gctcttaggc 540
attttcggcg aagcgtacag cgaagcgatg ctgatggcgc ggcagttcgg catcgatacc 600
gacaccatcg tcgaagccat cggcggctcg gcaatggact cgcctatgtt tcaaacaaaa 660
aaatcactat gggcaaaccg tgagttcccc cctgcctttg cactcaaaca cgcttccaaa 720
gaccttaacc tcgccgtcaa agagcttgaa caggcaggca acaccctgcc cgccgtcgaa 780
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<210> 364

<211> 289

<212> PRT

<213> Neisseria gonorrhoeae

<400> 364

Met Ser Ala Glu Thr Tyr Thr Gln Ile Gly Trp Val Gly Leu Gly Gln
 1 5 10 15

Met Gly Leu Pro Met Val Thr Arg Leu Leu Asp Gly Gly Ile Glu Val
 20 25 30

Gly Val Tyr Asn Arg Ser Pro Asp Lys Thr Ala Pro Ile Ser Ala Lys
 35 40 45

Gly Ala Lys Val Tyr Gly Ser Thr Ala Glu Leu Val Arg Ala Cys Pro
 50 55 60

Val Ile Phe Leu Met Val Ser Asp Tyr Ala Ala Val Cys Asp Ile Leu
 65 70 75 80

Asn Gly Val Arg Asp Gly Leu Ala Gly Lys Ile Ile Val Asn Met Ser
 85 90 95
 Thr Ile Ser Pro Thr Glu Asn Leu Ala Val Lys Ala Leu Val Glu Ala
 100 105 110
 Ala Gly Gly Gln Phe Ala Glu Ala Pro Val Ser Gly Ser Val Gly Pro
 115 120 125
 Ala Thr Asn Gly Thr Leu Leu Ile Leu Phe Gly Gly Ser Glu Ala Val
 130 135 140
 Leu Asn Pro Leu Gln Lys Ile Phe Ser Leu Val Gly Lys Lys Thr Phe
 145 150 155 160
 His Phe Gly Asp Val Gly Lys Gly Ser Gly Ala Lys Leu Val Leu Asn
 165 170 175
 Ser Leu Leu Gly Ile Phe Gly Glu Ala Tyr Ser Glu Ala Met Leu Met
 180 185 190
 Ala Arg Gln Phe Gly Ile Asp Thr Asp Thr Ile Val Glu Ala Ile Gly
 195 200 205
 Gly Ser Ala Met Asp Ser Pro Met Phe Gln Thr Lys Lys Ser Leu Trp
 210 215 220
 Ala Asn Arg Glu Phe Pro Pro Ala Phe Ala Leu Lys His Ala Ser Lys
 225 230 235 240
 Asp Leu Asn Leu Ala Val Lys Glu Leu Glu Gln Ala Gly Asn Thr Leu
 245 250 255
 Pro Ala Val Glu Thr Val Ala Ala Ser Tyr Arg Lys Ala Val Glu Ala
 260 265 270
 Gly Tyr Gly Glu Gln Asp Val Ser Gly Val Tyr Leu Lys Leu Ala Glu
 275 280 285

His

<210> 365

<211> 864

<212> DNA

<213> Neisseria meningitidis

<400> 365

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 atggtaacgc ggctcttgga cggcggcatc gaagtcggcg tatacaaccg ctgcgccgac 120
 aaaactgccc ccatctccgc caaaggcgca aaagtttacg gcaacaccgc cgaactcgtc 180
 cgcgactatc ccgtcatttt cctgatgggt tccgactatg ccgccgtgtg cgacatcctg 240
 aacggagttcc gcgacggatt ggccggcaam atcatcgtca acatgagcac catctccccg 300
 accgaaaagc tcgccgtcaa agcacttgtc gaagcgcagm gacagtttgc cgaagcacc 360
 gtttccggat cggtcgggcc cgccaccaac ggcacgctgc tgattctgtt cggcggcagc 420
 gaaccgtttt aaaccgctg caaaaaatat tttccctcgt cggcaaaaaa accttccatt 480

tcggcgatgt cggcaaaggt tcgggcgcga aactcgtctt gaactcgctc ttgggcattt 540
tcggcgaaacg tacagcgaas gmtgctgatg gcgcggcagt tcggcatcga taccgacacc 600
atcgtcgaag ccacgcgsga ctcggaatg gactcgccca tggtccaaac caaaaaatcc 660
ctgtgggcaa accgcgaatt cccgmccgmc ttcgccctca aacacgcctc caaagacctc 720
aacctcgccg tcaaagagct tgaacaggca ggcaacaccc tgcccggcgt cgaaaccggt 780
gctgccagct accgcaaagc agtcgaagcc ggctacggga cacaggacgt ttccggcggt 840
tacctgaaac tggcagaaca ctga 864

<210> 366

<211> 287

<212> PRT

<213> Neisseria meningitidis

<400> 366

Met Ser Ala Asn Glu Tyr Ala Gln Ile Gly Trp Ile Gly Leu Gly Gln
1 5 10 15

Met Gly Leu Pro Met Val Thr Arg Leu Leu Asp Gly Gly Ile Glu Val
20 25 30

Gly Val Tyr Asn Arg Ser Pro Asp Lys Thr Ala Pro Ile Ser Ala Lys
35 40 45

Gly Ala Lys Val Tyr Gly Asn Thr Ala Glu Leu Val Arg Asp Tyr Pro
50 55 60

Val Ile Phe Leu Met Val Ser Asp Tyr Ala Ala Val Cys Asp Ile Leu
65 70 75 80

Asn Gly Val Arg Asp Gly Leu Ala Gly Xaa Ile Ile Val Asn Met Ser
85 90 95

Thr Ile Ser Pro Thr Glu Lys Leu Ala Val Lys Ala Leu Val Glu Ala
100 105 110

Gln Arg Gln Phe Ala Glu Ala Pro Val Ser Gly Ser Val Gly Pro Ala
115 120 125

Thr Asn Gly Thr Leu Leu Ile Leu Phe Gly Gly Ser Glu Pro Phe Xaa
130 135 140

Thr Arg Cys Lys Lys Tyr Phe Pro Ser Ser Ala Lys Lys Pro Ser Ile
145 150 155 160

Ser Ala Met Ser Ala Lys Val Arg Ala Arg Asn Ser Ser Xaa Thr Arg
165 170 175

Ser Trp Ala Phe Ser Ala Asn Val Gln Arg Xaa Xaa Leu Met Ala Arg
180 185 190

Gln Phe Gly Ile Asp Thr Asp Thr Ile Val Glu Ala Ile Gly Asp Ser
195 200 205

Ala Met Asp Ser Pro Met Phe Gln Thr Lys Lys Ser Leu Trp Ala Asn
210 215 220

Arg Glu Phe Pro Xaa Xaa Phe Ala Leu Lys His Ala Ser Lys Asp Leu
 225 230 235 240

Asn Leu Ala Val Lys Glu Leu Glu Gln Ala Gly Asn Thr Leu Pro Ala
 245 250 255

Val Glu Thr Val Ala Ala Ser Tyr Arg Lys Ala Val Glu Ala Gly Tyr
 260 265 270

Gly Thr Gln Asp Val Ser Gly Val Tyr Leu Lys Leu Ala Glu His
 275 280 285

<210> 367
 <211> 870
 <212> DNA
 <213> Neisseria meningitidis

<400> 367
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 atggtaacgc ggctcttggga cggcggcatc gaagtcggcg tatacaaccg ctgcgccgac 120
 aaaactgccc ccattctccgc caaaggcgca aaagtgttacg gcaacaccgc cgaactcgtc 180
 cgcgactatc ccgtcatttt cctgatgggt tccgactatg ccgccgtgtg cgacatcctg 240
 aacggagtcg ggcacggatt ggccggcaaa atcatcgtca acatgagcac catctccccg 300
 accgaaaacc tcgccgtcaa agcacttgct gaagccgcag gcggacagtt tgccgaagca 360
 cccgtttccg gatcgggtcgg gcccgccacc aacggcacgc tgctgattct gttcggcggc 420
 agcgaagccg ttttaaaccg gctgcaaaaa atattttccc tcgtcggcaa aaaaaccttc 480
 catttcggcg atgtcggcaa aggttcgggc gcgaaactcg tcttgaactc gctcttgggc 540
 attttcggcg aagcgtacag cgaagcgatg ctgatggcgc ggcagttcgg catcgatacc 600
 gacaccatcg tcgaagccat cggcggctcg gcaatggact cgcccatgtt ccaaaccaaa 660
 aaatccctgt gggcaaacgc cgaattccca cccgccttcg cccctaaaaca cgcctccaaa 720
 gacctcaacc tcgccgtcaa agagcttgaa caggcaggca acaccctgcc cgcggtcgaa 780
 accgttgctg ccagctaccg caaagcagtc gaagccggct acggcgaaca ggacgtttcc 840
 ggcgtttacc tgaaattggc agaacactga 870

<210> 368
 <211> 289
 <212> PRT
 <213> Neisseria meningitidis

<400> 368
 Met Ser Ala Asn Glu Tyr Thr Gln Ile Gly Trp Ile Gly Leu Gly Gln
 1 5 10 15

Met Gly Leu Pro Met Val Thr Arg Leu Leu Asp Gly Gly Ile Glu Val
 20 25 30

Gly Val Tyr Asn Arg Ser Pro Asp Lys Thr Ala Pro Ile Ser Ala Lys
 35 40 45

Gly Ala Lys Val Tyr Gly Asn Thr Ala Glu Leu Val Arg Asp Tyr Pro
 50 55 60

Val Ile Phe Leu Met Val Ser Asp Tyr Ala Ala Val Cys Asp Ile Leu
 65 70 75 80

Asn Gly Val Arg Asp Gly Leu Ala Gly Lys Ile Ile Val Asn Met Ser
 85 90 95
 Thr Ile Ser Pro Thr Glu Asn Leu Ala Val Lys Ala Leu Val Glu Ala
 100 105 110
 Ala Gly Gly Gln Phe Ala Glu Ala Pro Val Ser Gly Ser Val Gly Pro
 115 120 125
 Ala Thr Asn Gly Thr Leu Leu Ile Leu Phe Gly Gly Ser Glu Ala Val
 130 135 140
 Leu Asn Pro Leu Gln Lys Ile Phe Ser Leu Val Gly Lys Lys Thr Phe
 145 150 155 160
 His Phe Gly Asp Val Gly Lys Gly Ser Gly Ala Lys Leu Val Leu Asn
 165 170 175
 Ser Leu Leu Gly Ile Phe Gly Glu Ala Tyr Ser Glu Ala Met Leu Met
 180 185 190
 Ala Arg Gln Phe Gly Ile Asp Thr Asp Thr Ile Val Glu Ala Ile Gly
 195 200 205
 Gly Ser Ala Met Asp Ser Pro Met Phe Gln Thr Lys Lys Ser Leu Trp
 210 215 220
 Ala Asn Arg Glu Phe Pro Pro Ala Phe Ala Leu Lys His Ala Ser Lys
 225 230 235 240
 Asp Leu Asn Leu Ala Val Lys Glu Leu Glu Gln Ala Gly Asn Thr Leu
 245 250 255
 Pro Ala Val Glu Thr Val Ala Ala Ser Tyr Arg Lys Ala Val Glu Ala
 260 265 270
 Gly Tyr Gly Glu Gln Asp Val Ser Gly Val Tyr Leu Lys Leu Ala Glu
 275 280 285

His

<210> 369
 <211> 870
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 369.
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 atggtaacgc ggctcttgga cggcggcatc gaagtcggcg tatacaaccg ctgcgccgac 120
 aaaactgccc ccatctccgc caaaggagca aaagtttacg gcagcaccgc cgaactcgtc 180
 cgcgcctgoc ccgtcatttt cctgatgggt tccgactatg ccgccgtgtg cgacatccctg 240
 aacggagtcc gcgacggatt ggccggcaaa atcatcgtca acatgagcac catctccccg 300
 accgaaaacc tcgccgtcaa agcacttgtc gaagccgcag gcggacagtt tgccgaagca 360
 cccgtttccg gatcggtcgg acccgccacc aacggcacac tgctgattct gttcggcggc 420
 agcgaagccg ttttaaaccg gctgcaaaaa atattttccc ttgtcggcaa aaaaaccttc 480

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catttcggcg atgtcggcaa aggctcgggc gcgaaactcg tcttgaactc gctcttaggc 540
atatttcggcg aagcgtaca g aagcgcgatg ctgatggcgc ggcagttcgg catcgatacc 600
gacaccatcg tcgaagccat cggcggctcg gcaatggact cgcctatggt tcaaacaaaa 660
aaatcactat gggcaaaccg tgagttcccc cctgcctttg cactcaaaca cgcttccaâa 720
gaccttaacc tcgccgtcaa agagcttgaa caggcaggca acaccctgcc cgccgtcgaa 780
accgttgctg ccagctaccg caaagcagtt gaagccggct acggcgaaca ggacgtttcc 840
ggcgtttacc tgaaattggc agaacactga 870

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<210> 370
<211> 289
<212> PRT
<213> Neisseria gonorrhoeae

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<400> 370
Met Ser Ala Glu Thr Tyr Thr Gln Ile Gly Trp Val Gly Leu Gly Gln
  1           5           10           15

Met Gly Leu Pro Met Val Thr Arg Leu Leu Asp Gly Gly Ile Glu Val
      20           25           30

Gly Val Tyr Asn Arg Ser Pro Asp Lys Thr Ala Pro Ile Ser Ala Lys
      35           40           45

Gly Ala Lys Val Tyr Gly Ser Thr Ala Glu Leu Val Arg Ala Cys Pro
      50           55           60

Val Ile Phe Leu Met Val Ser Asp Tyr Ala Ala Val Cys Asp Ile Leu
      65           70           75           80

Asn Gly Val Arg Asp Gly Leu Ala Gly Lys Ile Ile Val Asn Met Ser
      85           90           95

Thr Ile Ser Pro Thr Glu Asn Leu Ala Val Lys Ala Leu Val Glu Ala
      100          105          110

Ala Gly Gly Gln Phe Ala Glu Ala Pro Val Ser Gly Ser Val Gly Pro
      115          120          125

Ala Thr Asn Gly Thr Leu Leu Ile Leu Phe Gly Gly Ser Glu Ala Val
      130          135          140

Leu Asn Pro Leu Gln Lys Ile Phe Ser Leu Val Gly Lys Lys Thr Phe
      145          150          155          160

His Phe Gly Asp Val Gly Lys Gly Ser Gly Ala Lys Leu Val Leu Asn
      165          170          175

Ser Leu Leu Gly Ile Phe Gly Glu Ala Tyr Ser Glu Ala Met Leu Met
      180          185          190

Ala Arg Gln Phe Gly Ile Asp Thr Asp Thr Ile Val Glu Ala Ile Gly
      195          200          205

Gly Ser Ala Met Asp Ser Pro Met Phe Gln Thr Lys Lys Ser Leu Trp
      210          215          220

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Ala Asn Arg Glu Phe Pro Pro Ala Phe Ala Leu Lys His Ala Ser Lys
 225 230 235 240

Asp Leu Asn Leu Ala Val Lys Glu Leu Glu Gln Ala Gly Asn Thr Leu
 245 250 255

Pro Ala Val Glu Thr Val Ala Ala Ser Tyr Arg Lys Ala Val Glu Ala
 260 265 270

Gly Tyr Gly Glu Gln Asp Val Ser Gly Val Tyr Leu Lys Leu Ala Glu
 275 280 285

His

<210> 371

<211> 870

<212> DNA

<213> Neisseria meningitidis

<400> 371

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aaaactgccc	ccatctccgc	caaaggcgca	aaagtcttacg	gcaacaccgc	cgaactc	gtc	180
cgcgactatc	ccgtcatttt	cctgatgggt	tccgactatg	ccgccgtgtg	cgacatc	cctg	240
aacggagtc	gcgacggatt	ggccggcaaa	atcatcgtca	acatgagcac	catctccc	cg	300
accgaaaacc	tcgccgtcaa	agcacttgtc	gaagccgcag	gcggacagtt	tgccgaagca		360
cccgtttccg	gatcggtcgg	gcccggcacc	aacggcacgc	tgctgattct	gttcggcggc		420
agcgaagccg	ttttaaaccc	gctgcaaaaa	atatcttccc	tcgtcggcaa	aaaaaccttc		480
catttcggcg	atgtcggcaa	aggttcgggc	gcgaaactcg	tcttgaactc	gctcttgggc		540
attttcggcg	aagcgtacag	cgaancgatg	ctgatggcgc	ggcagttcgg	catcgatacc		600
gacaccatcg	tcgaagccat	cggsgactcg	gcaatggact	cgcccatgtt	ccaaaccaa		660
aatccctgt	gggcaaaccg	cgaattcccg	cccgccttcg	ccctcaaaca	cgcccca		720
gacctcaacc	tcgccgtcaa	agagcttgaa	caggcaggca	acacctgcc	cgccgtcgaa		780
accgttgctg	ccagctaccg	caaagcagtc	gaagccggct	acggcgaaca	ggacgtttcc		840
ggcgtttacc	tgaaactggc	agaacactga					870

<210> 372

<211> 289

<212> PRT

<213> Neisseria meningitidis

<400> 372

Met Ser Ala Asn Glu Tyr Ala Gln Ile Gly Trp Ile Gly Leu Gly Gln
 1 5 10 15

Met Gly Leu Pro Met Val Thr Arg Leu Leu Asp Gly Gly Ile Glu Val
 20 25 30

Gly Val Tyr Asn Arg Ser Pro Asp Lys Thr Ala Pro Ile Ser Ala Lys
 35 40 45

Gly Ala Lys Val Tyr Gly Asn Thr Ala Glu Leu Val Arg Asp Tyr Pro
 50 55 60

Val Ile Phe Leu Met Val Ser Asp Tyr Ala Ala Val Cys Asp Ile Leu
 65 70 75 80
 Asn Gly Val Arg Asp Gly Leu Ala Gly Lys Ile Ile Val Asn Met Ser
 85 90 95
 Thr Ile Ser Pro Thr Glu Asn Leu Ala Val Lys Ala Leu Val Glu Ala
 100 105 110
 Ala Gly Gly Gln Phe Ala Glu Ala Pro Val Ser Gly Ser Val Gly Pro
 115 120 125
 Ala Thr Asn Gly Thr Leu Leu Ile Leu Phe Gly Gly Ser Glu Ala Val
 130 135 140
 Leu Asn Pro Leu Gln Lys Ile Phe Ser Leu Val Gly Lys Lys Thr Phe
 145 150 155 160
 His Phe Gly Asp Val Gly Lys Gly Ser Gly Ala Lys Leu Val Leu Asn
 165 170 175
 Ser Leu Leu Gly Ile Phe Gly Glu Ala Tyr Ser Glu Xaa Met Leu Met
 180 185 190
 Ala Arg Gln Phe Gly Ile Asp Thr Asp Thr Ile Val Glu Ala Ile Gly
 195 200 205
 Asp Ser Ala Met Asp Ser Pro Met Phe Gln Thr Lys Lys Ser Leu Trp
 210 215 220
 Ala Asn Arg Glu Phe Pro Pro Ala Phe Ala Leu Lys His Ala Ser Lys
 225 230 235 240
 Asp Leu Asn Leu Ala Val Lys Glu Leu Glu Gln Ala Gly Asn Thr Leu
 245 250 255
 Pro Ala Val Glu Thr Val Ala Ala Ser Tyr Arg Lys Ala Val Glu Ala
 260 265 270
 Gly Tyr Gly Glu Gln Asp Val Ser Gly Val Tyr Leu Lys Leu Ala Glu
 275 280 285

His

<210> 373

<211> 870

<212> DNA

<213> *Neisseria meningitidis*

<400> 373

atgtccgcaa acgaatacac acaaatcggc tggataggct tagggcaaat gggctctgcct 60
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 aaaactgccc ccattctccgc caaaggcgca aaagtttacg gcaacaccgc cgaactcgtc 180
 cgcgactatc ccgtcatttt cctgatgggt tccgactatg ccgccgtgtg cgacatcctg 240
 aacggagtcg gcgacggatt ggccggcaaa atcatcgtea acatgagcac catctccccg 300

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accgaaaacc tcgccgtcaa agcacttgct gaagccgcag gcggacagtt tgccgaagca 360
cccgtttccg gatcggtcgg gcccgccacc aacggcacgc tgctgattct gttcggcggc 420
agcgaagccg ttttaaaccg gctgcaaaaa atattttccc tcgtcggcaa aaaaaccttc 480
catttcggcg atgtcggcaa aggttcgggc gcgaaactcg tcttgaactc gctcttgggc 540
attttcggcg aagcgtacag cgaagcgatg ctgatggcgc ggcagttcgg catcgatacc 600
gacaccatcg tcgaagccat cggcggctcg gcaatggact cgcccatgtt ccaaaccaaa 660
aaatccctgt gggcaaaccg cgaattccca cccgccttcg ccctcaaaca cgcctccaaa 720
gacctcaacc tcgccgtcaa agagcttgaa caggcaggca acaccctgcc cgccgtcgaa 780
accgttgctg ccagctaccg caaagcagtc gaagccggct acggcgaaca ggacgtttcc 840
ggcgtttacc tgaaattggc agaactga

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<210> 374
 <211> 289
 <212> PRT
 <213> *Neisseria meningitidis*

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<400> 374
Met Ser Ala Asn Glu Tyr Thr Gln Ile Gly Trp Ile Gly Leu Gly Gln
  1             5             10             15

Met Gly Leu Pro Met Val Thr Arg Leu Leu Asp Gly Gly Ile Glu Val
      20             25             30

Gly Val Tyr Asn Arg Ser Pro Asp Lys Thr Ala Pro Ile Ser Ala Lys
      35             40             45

Gly Ala Lys Val Tyr Gly Asn Thr Ala Glu Leu Val Arg Asp Tyr Pro
      50             55             60

Val Ile Phe Leu Met Val Ser Asp Tyr Ala Ala Val Cys Asp Ile Leu
      65             70             75             80

Asn Gly Val Arg Asp Gly Leu Ala Gly Lys Ile Ile Val Asn Met Ser
      85             90             95

Thr Ile Ser Pro Thr Glu Asn Leu Ala Val Lys Ala Leu Val Glu Ala
      100            105            110

Ala Gly Gly Gln Phe Ala Glu Ala Pro Val Ser Gly Ser Val Gly Pro
      115            120            125

Ala Thr Asn Gly Thr Leu Leu Ile Leu Phe Gly Gly Ser Glu Ala Val
      130            135            140

Leu Asn Pro Leu Gln Lys Ile Phe Ser Leu Val Gly Lys Lys Thr Phe
      145            150            155            160

His Phe Gly Asp Val Gly Lys Gly Ser Gly Ala Lys Leu Val Leu Asn
      165            170            175

Ser Leu Leu Gly Ile Phe Gly Glu Ala Tyr Ser Glu Ala Met Leu Met
      180            185            190

Ala Arg Gln Phe Gly Ile Asp Thr Asp Thr Ile Val Glu Ala Ile Gly
      195            200            205

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Gly Ser Ala Met Asp Ser Pro Met Phe Gln Thr Lys Lys Ser Leu Trp
210 215 220

Ala Asn Arg Glu Phe Pro Pro Ala Phe Ala Leu Lys His Ala Ser Lys
225 230 235 240

Asp Leu Asn Leu Ala Val Lys Glu Leu Glu Gln Ala Gly Asn Thr Leu
245 250 255

Pro Ala Val Glu Thr Val Ala Ala Ser Tyr Arg Lys Ala Val Glu Ala
260 265 270

Gly Tyr Gly Glu Gln Asp Val Ser Gly Val Tyr Leu Lys Leu Ala Glu
275 280 285

His

<210> 375

<211> 513

<212> DNA

<213> Neisseria gonorrhoeae

<400> 375

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atggtatttaa cctttatttg ggcaaccggc ggccctggttg ccgatgccaa accgtccgtc 60
ctcttcgaca cccaagcccc cgtcggcacc ggctactgga tttacgccgc caccgccctg 120
cccgtctgcc tcgcttcctt cggcttccac ggcaacgttt ccagcctgct caaatacttt 180
aaaggcgacg cgcccaaagt ggcgaaatcc atctgggcag gtacattggt tgccttggtg 240
atttacgtcc tctggcaaac cgccatccaa agcaacctgc cgcgcaacga gttcgcccc 300
gtgattgccg ccgagaggca actctccgtc ctgaatgaaa ccctgtccaa attcgcccaa 360
accggcgata tggataaaat attgtcccta tttccctaca tggcaatcgc cacctccttt 420
ttaggcgtaa ccttaggcct gtttgacaac atcgccggac atcttcaaat ggaacgacag 480
tatgtccggg cggcaccaaa accgtcgcgc tga 513
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<210> 376

<211> 170

<212> PRT

<213> Neisseria gonorrhoeae

<400> 376

Met Val Leu Thr Phe Ile Trp Ala Thr Gly Gly Leu Val Ala Asp Ala
1 5 10 15

Lys Pro Ser Val Leu Phe Asp Thr Gln Ala Pro Val Gly Thr Gly Tyr
20 25 30

Trp Ile Tyr Ala Ala Thr Ala Leu Pro Val Cys Leu Ala Ser Phe Gly
35 40 45

Phe His Gly Asn Val Ser Ser Leu Leu Lys Tyr Phe Lys Gly Asp Ala
50 55 60

Pro Lys Val Ala Lys Ser Ile Trp Ala Gly Thr Leu Val Ala Leu Val
65 70 75 80

Ile Tyr Val Leu Trp Gln Thr Ala Ile Gln Gly Asn Leu Pro Arg Asn
 85 90 95
 Glu Phe Ala Pro Val Ile Ala Ala Glu Gly Gln Val Ser Val Leu Ile
 100 105 110
 Glu Thr Leu Ser Lys Phe Ala Gln Thr Gly Asn Met Asp Lys Ile Leu
 115 120 125
 Ser Leu Phe Ser Tyr Met Ala Ile Ala Thr Ser Phe Leu Gly Val Thr
 130 135 140
 Leu Gly Leu Phe Asp Tyr Ile Ala His Leu Gln Met Glu Arg Gln His
 145 150 155 160
 Leu Arg Ala Ala Pro Lys Pro Pro Arg
 165

<210> 379
 <211> 777
 <212> DNA
 <213> Neisseria meningitidis

<400> 379
 atggtattaa cctttatttg ggcaaccggc ggccctgattg ccgatgccaa actgcccgtc 60
 ctcttcgaca cccaagcccc tacccggcacc aactactgga tttatgtcgc caccgccctg 120
 cccgtctgcc ttgcgctcatt cggtttccac ggcaacgtct ccagcctgct caaatacttt 180
 aaaggcgacg cgcccaaagt ggctaaatcc atctggacgg gcacactgat tgcgctggta 240
 atttacgtcc tctggcaaac cgccatccaa ggcaacctgc cgcgcaacga gttcgcccc 300
 gtgattgccg ccgaagggca agtctccgtc ctgattgaaa ccctgtccaa attcgcccaa 360
 accggcaata tggacaaaat attgtccctg ttttccata tggcgatcgc cacctcgttt 420
 ttaggcgtaa cgctcggact cttcgactac atcgccgaca tcttcaaag gaacgacagc 480
 gtgtccggcc gcacaaaaac cgccgcgctg accttcctgc cgcttctaatt ttcctgcctg 540
 ctcttcccca cgggctttgt tacccgccatc ggctacgtcg gcctggcggc aaccgtctgg 600
 acaggcatca tccccgccat gctgctctac cgttcgcgca aaaaattcgg cgcaggcaaa 660
 acctataaag ttacggcgg cttgtggctg atggtttggg tcttcctttt cggcatcgtc 720
 aacatcgccg cacaggtatt gagccaaatg gaactcgtcc ccgtatttaa aggataa 777

<210> 380
 <211> 258
 <212> PRT
 <213> Neisseria meningitidis

<400> 380
 Met Val Leu Thr Phe Ile Trp Ala Thr Gly Gly Leu Ile Ala Asp Ala
 1 5 10 15
 Lys Leu Pro Val Leu Phe Asp Thr Gln Ala Pro Thr Gly Thr Asn Tyr
 20 25 30
 Trp Ile Tyr Val Ala Thr Ala Leu Pro Val Cys Leu Ala Ser Phe Gly
 35 40 45
 Phe His Gly Asn Val Ser Ser Leu Leu Lys Tyr Phe Lys Gly Asp Ala
 50 55 60

Pro Lys Val Ala Lys Ser Ile Trp Thr Gly Thr Leu Ile Ala Leu Val
 65 70 75 80
 Ile Tyr Val Leu Trp Gln Thr Ala Ile Gln Gly Asn Leu Pro Arg Asn
 85 90 95
 Glu Phe Ala Pro Val Ile Ala Ala Glu Gly Gln Val Ser Val Leu Ile
 100 105 110
 Glu Thr Leu Ser Lys Phe Ala Gln Thr Gly Asn Met Asp Lys Ile Leu
 115 120 125
 Ser Leu Phe Ser Tyr Met Ala Ile Ala Thr Ser Phe Leu Gly Val Thr
 130 135 140
 Leu Gly Leu Phe Asp Tyr Ile Ala Asp Ile Phe Lys Trp Asn Asp Ser
 145 150 155 160
 Val Ser Gly Arg Thr Lys Thr Ala Ala Leu Thr Phe Leu Pro Pro Leu
 165 170 175
 Ile Ser Cys Leu Leu Phe Pro Thr Gly Phe Val Thr Ala Ile Gly Tyr
 180 185 190
 Val Gly Leu Ala Ala Thr Val Trp Thr Gly Ile Ile Pro Ala Met Leu
 195 200 205
 Leu Tyr Arg Ser Arg Lys Lys Phe Gly Ala Gly Lys Thr Tyr Lys Val
 210 215 220
 Tyr Gly Gly Leu Trp Leu Met Val Trp Val Phe Leu Phe Gly Ile Val
 225 230 235 240
 Asn Ile Ala Ala Gln Val Leu Ser Gln Met Glu Leu Val Pro Val Phe
 245 250 255
 Lys Gly

<210> 381
 <211> 519
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 381
 atgttgccgg gcttcaaccg gatattcaaa cggtttgctc caacactcgg aacggcgcat 60
 aaaacgccgc ctttcgcgtt atcccgaacg gggcggtctaa tcagatccta tcgccataaa 120
 aggcgggggt tcaaccgaaa aggaattgag atgaataaaa ctttgtctat ttgcccggcg 180
 gcaatcttac tcggcgggtg cgccgccggc ggcaacacat tcggcagctt agacggcggc 240
 acgggtatgg gtggcagcat cgtcaaaatg acggtagaaa gccaatgccg tgcggaattg 300
 gacaggcgca gcgaatggcg ttgaccgcg ctggcgatga gtgccgaaaa acaggcgga 360
 tgggaaaaca agatttgcg ctgcgtacc gaagaagcac ctaaccagct gaccggcaac 420
 gatgtgatgc agatgctgaa ccagtccacg cgcaatcagg cacttgccgc cctgaccgtc 480
 aaaacggttt ccgcctgctt caaacgcctg taccgctaa 519

<210> 382

<211> 172

<212> PRT

<213> Neisseria gonorrhoeae

<400> 382

Met Leu Pro Gly Phe Asn Arg Ile Phe Lys Arg Phe Ala Pro Thr Leu
1 5 10 15

Gly Thr Ala His Lys Thr Pro Pro Phe Ala Leu Ser Arg Thr Gly Arg
20 25 30

Leu Ile Arg Ser Tyr Arg His Lys Arg Arg Gly Phe Asn Arg Lys Gly
35 40 45

Ile Glu Met Asn Lys Thr Leu Ser Ile Leu Pro Ala Ala Ile Leu Leu
50 55 60

Gly Gly Cys Ala Ala Gly Gly Asn Thr Phe Gly Ser Leu Asp Gly Gly
65 70 75 80

Thr Gly Met Gly Gly Ser Ile Val Lys Met Thr Val Glu Ser Gln Cys
85 90 95

Arg Ala Glu Leu Asp Arg Arg Ser Glu Trp Arg Leu Thr Ala Leu Ala
100 105 110

Met Ser Ala Glu Lys Gln Ala Glu Trp Glu Asn Lys Ile Cys Gly Cys
115 120 125

Ala Thr Glu Glu Ala Pro Asn Gln Leu Thr Gly Asn Asp Val Met Gln
130 135 140

Met Leu Asn Gln Ser Thr Arg Asn Gln Ala Leu Ala Ala Leu Thr Val
145 150 155 160

Lys Thr Val Ser Ala Cys Phe Lys Arg Leu Tyr Arg
165 170

<210> 383

<211> 522

<212> DNA

<213> Neisseria meningitidis

<400> 383

atgttgccgg gcttcaaccg gatattcaaa cggtttgttc caacactcgg aacggcgcat 60
aaaacgccgc cttcgcggtt atcccgaacg ggcgggctaa tcagattcta tcgccataaa 120
aggcgggggtt tcaaccgaaa aggaattgag atgaataaaa ctttgtctat tttgccggtg 180
gcaatcttac tcggcggctg cgccgcggga ggcggtaaca cattcggcag cttagacggt 240
ggcacaggca tgggcggcag catcgtcaaa atggcgggtg ggagccaatg ccgtgcggaa 300
ttggacaaac gcagcgaatg gcgtttgacc gcgctggcga tgagtgccga aaaacaggcg 360
gagtgggaaa acaagatttg cgcttgctgc gcccaagaag caccgaacg gatgaccggc 420
aacgatgtga tgcagatgct ggctccgtcc acgcgcaatc aggcaattgc cgccctgacc 480
gccaaaacgg tttccgcctg cttcaaacac ctgtaccgct aa 522

<210> 384
 <211> 173
 <212> PRT
 <213> Neisseria meningitidis

<400> 384
 Met Leu Pro Gly Phe Asn Arg Ile Phe Lys Arg Phe Val Pro Thr Leu
 1 5 10 15
 Gly Thr Ala His Lys Thr Pro Pro Phe Ala Leu Ser Arg Thr Gly Arg
 20 25 30
 Leu Ile Arg Phe Tyr Arg His Lys Arg Arg Gly Phe Asn Arg Lys Gly
 35 40 45
 Ile Glu Met Asn Lys Thr Leu Ser Ile Leu Pro Val Ala Ile Leu Leu
 50 55 60
 Gly Gly Cys Ala Ala Gly Gly Gly Asn Thr Phe Gly Ser Leu Asp Gly
 65 70 75 80
 Gly Thr Gly Met Gly Gly Ser Ile Val Lys Met Ala Val Gly Ser Gln
 85 90 95
 Cys Arg Ala Glu Leu Asp Lys Arg Ser Glu Trp Arg Leu Thr Ala Leu
 100 105 110
 Ala Met Ser Ala Glu Lys Gln Ala Glu Trp Glu Asn Lys Ile Cys Ala
 115 120 125
 Cys Val Ala Gln Glu Ala Pro Glu Arg Met Thr Gly Asn Asp Val Met
 130 135 140
 Gln Met Leu Ala Pro Ser Thr Arg Asn Gln Ala Leu Ala Ala Leu Thr
 145 150 155 160
 Ala Lys Thr Val Ser Ala Cys Phe Lys His Leu Tyr Arg
 165 170

<210> 385
 <211> 522
 <212> DNA
 <213> Neisseria meningitidis

<400> 385
 atgttgccgg gcttcaaccg gatattcaaaa cggtttgttc caacactcgg aacggcgcat 60
 aaaacgccgc ctttcgcgtt atcccgaaacg gggcggtctaa tcagattcta tcgccataaa 120
 agggcggggtt tcaaccgaaa aggaattgag atgaataaaa ctttgtctat tttgccgggtg 180
 gcaatcttac tcggcggctg cgccgccggg ggcggtaaca cattcggcag cttagacggc 240
 ggcacaggta tgggcggcag catcgtaaaa atggcggtag aaagccaatg ccgtgcggaa 300
 ttgaacaaac gcagcgaatg gcgtttgacc gcgctggcga tgagtgccga aaaacaggcg 360
 gaatgggaaa acaagatttg cgcttgcgtc gccaagaag caccaacca gctgaccggc 420
 aacgatgtga tgcagatgct ggatccgtcc acgcgcaatc aggcaattgc cgccctgacc 480
 gccaaaacgg tttccgcctg cttcaaacac ctgtaccgct aa 522

<210> 386
 <211> 173
 <212> PRT
 <213> Neisseria meningitidis

<400> 386
 Met Leu Pro Gly Phe Asn Arg Ile Phe Lys Arg Phe Val Pro Thr Leu
 1 5 10 15
 Gly Thr Ala His Lys Thr Pro Pro Phe Ala Leu Ser Arg Thr Gly Arg
 20 25 30
 Leu Ile Arg Phe Tyr Arg His Lys Arg Arg Gly Phe Asn Arg Lys Gly
 35 40 45
 Ile Glu Met Asn Lys Thr Leu Ser Ile Leu Pro Val Ala Ile Leu Leu
 50 55 60
 Gly Gly Cys Ala Ala Gly Gly Gly Asn Thr Phe Gly Ser Leu Asp Gly
 65 70 75 80
 Gly Thr Gly Met Gly Gly Ser Ile Val Lys Met Ala Val Glu Ser Gln
 85 90 95
 Cys Arg Ala Glu Leu Asn Lys Arg Ser Glu Trp Arg Leu Thr Ala Leu
 100 105 110
 Ala Met Ser Ala Glu Lys Gln Ala Glu Trp Glu Asn Lys Ile Cys Ala
 115 120 125
 Cys Val Ala Gln Glu Ala Pro Asn Gln Leu Thr Gly Asn Asp Val Met
 130 135 140
 Gln Met Leu Asp Pro Ser Thr Arg Asn Gln Ala Leu Ala Ala Leu Thr
 145 150 155 160
 Ala Lys Thr Val Ser Ala Cys Phe Lys His Leu Tyr Arg
 165 170

<210> 387
 <211> 369
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 387
 atgtattatc gccgggttgt ggggctatcc gatggacttg gcgatttggc agccggtatt 60
 gatcgtaggc gtatgcttac cgcttttgga agcgggcatg gaaatgacgc gcaaaggcaa 120
 aaccacccaa tccgccgcca tcgtggtgtt ctcttcgcgc tggatcaatcc ggttttcggc 180
 tgggcgttga cgatgctgtt ggataatttg ggcttaatcg gctgcaaaga acgcagcgcg 240
 caattaggtt ttgtcggacg agtattgata ccgcagtag gtttcttaat cttgtgtgtg 300
 gcgatgggtg cggtcgggat gctgcccggt atccctccgt ttttgagaca gttcaaactc 360
 ttgggctag 369

<210> 388

<211> 122
<212> PRT
<213> Neisseria gonorrhoeae

<400> 388

Met Tyr Tyr Arg Arg Val Val Gly Leu Ser Asp Gly Leu Gly Asp Leu
1 5 10 15
Ala Ala Gly Ile Asp Arg Arg Arg Met Leu Thr Ala Phe Gly Ser Gly
20 25 30
His Gly Asn Asp Ala Gln Arg Gln Asn His Pro Ile Arg Arg His Arg
35 40 45
Gly Val Leu Phe Arg Leu Val Asn Pro Val Phe Gly Trp Ala Leu Thr
50 55 60
Met Leu Leu Asp Asn Leu Gly Leu Ile Gly Cys Lys Glu Arg Ser Ala
65 70 75 80
Gln Leu Gly Phe Val Gly Arg Val Leu Ile Pro Ala Val Gly Phe Leu
85 90 95
Ile Leu Cys Val Ala Met Gly Ala Val Gly Met Leu Pro Gly Ile Pro
100 105 110
Pro Phe Leu Glu Gln Phe Lys Ser Leu Gly
115 120

<210> 389
<211> 381
<212> DNA
<213> Neisseria meningitidis

<400> 389

atgtattatc gccgggttat ggggctatcc gatggacttg gcgatttggc agccgggtatt 60
gagcgtagcc ttggtcgtag gcgtatactt accgcttttg gaagcgggca tggaaatgac 120
gcgcaaagc aaaaccaccc aatccgcgc catcggtgtg ttctcttcg ccttgtcaat 180
ccggttttcg gctgggcgtt gacgatgctg ttggataatt tgggcttaat cggtcgcaaa 240
gagcgcagtg cgcaattagg ttctgcgcga cgcgtgttga taccgcagc aggtttcttg 300
atcttgtgtg tggcgatggg tgcggtcggg atgctgcccg gtatcccgcc gtttttggaa 360
cacttcaaat ctttgggcta g 381

<210> 390
<211> 126
<212> PRT
<213> Neisseria meningitidis

<400> 390

Met Tyr Tyr Arg Arg Val Met Gly Leu Ser Asp Gly Leu Gly Asp Leu
1 5 10 15
Ala Ala Gly Ile Glu Arg Ser Leu Gly Arg Arg Arg Ile Leu Thr Ala
20 25 30

Phe Gly Ser Gly His Gly Asn Asp Ala Gln Arg Gln Asn His Pro Ile
35 40 45

Arg Arg His Arg Gly Val Leu Phe Arg Leu Val Asn Pro Val Phe Gly
50 55 60

Trp Ala Leu Thr Met Leu Leu Asp Asn Leu Gly Leu Ile Gly Cys Lys
65 70 75 80

Glu Arg Ser Ala Gln Leu Gly Phe Ala Gly Arg Val Leu Ile Pro Ala
85 90 95

Val Gly Phe Leu Ile Leu Cys Val Ala Met Gly Ala Val Gly Met Leu
100 105 110

Pro Gly Ile Pro Pro Phe Leu Glu His Phe Lys Ser Leu Gly
115 120 125

<210> 391

<211> 381

<212> DNA

<213> Neisseria meningitidis

<400> 391

atgtattatc gccgggttgt ggggctatcc gatggacttg gcgatttggc agccggtatt 60
gagcgtagcc ttggtcgtag gcgtatactt accgcttttg gaagcgggca tggaaatgac 120
gcgcaaaggc aaaaccaccc aatccgcgcg caccgtggtg ttctcttccg cttggtcaat 180
ccggttttcg gctgggcgtt gacgatgctg ttggataatt tgggcttaat cggctgcaaa 240
gagcgcagcg cgcaattagg ttccaccgga cgcgtattga taccgtagt aggtttcttg 300
atcttggtg tgccgatggg tgcggtcggg atgctgcccg gtatcccgcc gtttttgag 360
cacttcaaat ctttgggcta g 381

<210> 392

<211> 126

<212> PRT

<213> Neisseria meningitidis

<400> 392

Met Tyr Tyr Arg Arg Val Val Gly Leu Ser Asp Gly Leu Gly Asp Leu
1 5 10 15

Ala Ala Gly Ile Glu Arg Ser Leu Gly Arg Arg Arg Ile Leu Thr Ala
20 25 30

Phe Gly Ser Gly His Gly Asn Asp Ala Gln Arg Gln Asn His Pro Ile
35 40 45

Arg Arg His Arg Gly Val Leu Phe Arg Leu Val Asn Pro Val Phe Gly
50 55 60

Trp Ala Leu Thr Met Leu Leu Asp Asn Leu Gly Leu Ile Gly Cys Lys
65 70 75 80

Glu Arg Ser Ala Gln Leu Gly Phe Thr Gly Arg Val Leu Ile Pro Val
85 90 95

Val Gly Phe Leu Ile Leu Cys Val Ala Met Gly Ala Val Gly Met Leu
100 105 110

Pro Gly Ile Pro Pro Phe Leu Glu His Phe Lys Ser Leu Gly
115 120 125

<210> 393
<211> 372
<212> DNA
<213> Neisseria gonorrhoeae

<400> 393
atgcggtctg aaacacgcct gccgaacctt atccgcgcct tgatatttgc cctgggtttc 60
atcttcctga acgcctgttc ggaacaaacc gcgcaaaccg ttaccctgca aggcgaaacg 120
atgggtacga cctataccgt caaatacctt tcaaataatc gggacaaact cccctccct 180
gccaaaatac aaaagcgcat tgatgatgcg cttaaagaag tcaaccggca gatgtccacc 240
taccagaccg attccgaaat cagccggttt atacagacan atgctggaga gctcttcgcg 300
tntcatgcag nttctataac tgattccgcc gaagactgtc tgcctaatac gcctatctca 360
tcggcgctct ga 372

<210> 394
<211> 120
<212> PRT
<213> Neisseria gonorrhoeae

<400> 394
Met Pro Ser Glu Thr Arg Leu Pro Asn Leu Ile Arg Ala Leu Ile Phe
1 5 10 15
Ala Leu Gly Phe Ile Phe Leu Asn Ala Cys Ser Glu Gln Thr Ala Gln
20 25 30
Thr Val Thr Leu Gln Gly Glu Thr Met Gly Thr Thr Tyr Thr Val Lys
35 40 45
Tyr Leu Ser Asn Asn Arg Asp Lys Leu Pro Ser Pro Ala Lys Ile Gln
50 55 60
Lys Arg Ile Asp Asp Ala Leu Lys Glu Val Asn Arg Gln Met Ser Thr
65 70 75 80
Tyr Gln Thr Asp Ser Glu Ile Ser Arg Phe Ile Gln Thr Ala Gly Glu
85 90 95
Leu Phe Ala His Ala Ser Ile Thr Asp Ser Ala Glu Asp Cys Leu Pro
100 105 110
Asn Thr Pro Ile Ser Ser Ala Leu
115 120

<210> 395
<211> 1056
<212> DNA

<213> Neisseria meningitidis

<400> 395

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atgccgtctg aaacacgcct gccgaacttt atccgcgtct tgatatttgc cctgggtttc 60
atcttcctga acgcctgttc ggaacaaacc gcgcaaaccg ttaccctgca aggcgaaacg 120
atgggcacga cctataycgt caaatacctt tcaaataatc gggacaaact cccctcacct 180
gccgaaatac awaaacgcat cgatgacgcg cttaaagaak tcaaccggya gatgtccacc 240
tatcagcccg actccgaaat cagccggttc aaccaacaca cagccggcaa gcccctccgc 300
atttcaagcg acttcgcaca cgttactgcc gaagccgtcc gcctgaaccg cctgacacac 360
ggcgcgctgg acgtaaccgt cggccccttg gtcaaccttt ggggattcgg ccccgacaaa 420
tccgttaccg gtgaaccgtc gccggaacaa atcaaacagg cggcatctta tacgggcata 480
gacaaaatca ttttgaaaca aggcaaagat tacgcttcct tgagcaaaac ccacccaag 540
gcctatttgg atttatcttc gattgccaaa ggcttcgcg tgataaagt tgcgggcgaa 600
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ggcaaaaacg cgcgcggcga accgtggcgc atcggtatcg agcagcccaa tatcgtccaa 720
ggcggcaata cgcagattat cgtcccgtg aacaaccgtt cgcttgccac ttccggcgat 780
taccgtattt tccacgtcga taaaaacggc aaacgcctct cccatatcat caaccgaac 840
aacaacgac ccacagcca caacctcgcc tccatcagcg tggtcgcaga cagtgcgatg 900
acggcggacg cgttgtccac aggattattc gtattggcg aaacogaagc cttaaagctg 960
gcagagcgcg aaaaactcgc tgttttctcg attgtcaggg ataaaggcgg ctaccgcacc 1020
gccatgtctt ccgaatttga aaaactgctc cgctaa 1056
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<210> 396

<211> 351

<212> PRT

<213> Neisseria meningitidis

<400> 396

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Met Pro Ser Glu Thr Arg Leu Pro Asn Phe Ile Arg Val Leu Ile Phe
 1             5             10             15

Ala Leu Gly Phe Ile Phe Leu Asn Ala Cys Ser Glu Gln Thr Ala Gln
      20             25             30

Thr Val Thr Leu Gln Gly Glu Thr Met Gly Thr Thr Tyr Xaa Val Lys
      35             40             45

Tyr Leu Ser Asn Asn Arg Asp Lys Leu Pro Ser Pro Ala Glu Ile Xaa
      50             55             60

Lys Arg Ile Asp Asp Ala Leu Lys Glu Xaa Asn Arg Xaa Met Ser Thr
      65             70             75             80

Tyr Gln Pro Asp Ser Glu Ile Ser Arg Phe Asn Gln His Thr Ala Gly
      85             90             95

Lys Pro Leu Arg Ile Ser Ser Asp Phe Ala His Val Thr Ala Glu Ala
      100            105            110

Val Arg Leu Asn Arg Leu Thr His Gly Ala Leu Asp Val Thr Val Gly
      115            120            125

Pro Leu Val Asn Leu Trp Gly Phe Gly Pro Asp Lys Ser Val Thr Arg
      130            135            140

Glu Pro Ser Pro Glu Gln Ile Lys Gln Ala Ala Ser Tyr Thr Gly Ile
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145		150		155		160
Asp Lys Ile Ile Leu Lys Gln Gly Lys Asp Tyr Ala Ser Leu Ser Lys						
	165			170		175
Thr His Pro Lys Ala Tyr Leu Asp Leu Ser Ser Ile Ala Lys Gly Phe						
	180			185		190
Gly Val Asp Lys Val Ala Gly Glu Leu Glu Lys Tyr Gly Ile Gln Asn						
	195			200		205
Tyr Leu Val Glu Ile Gly Gly Glu Leu His Gly Lys Gly Lys Asn Ala						
	210			215		220
Arg Gly Glu Pro Trp Arg Ile Gly Ile Glu Gln Pro Asn Ile Val Gln						
	225			230		235
Gly Gly Asn Thr Gln Ile Ile Val Pro Leu Asn Asn Arg Ser Leu Ala						
		245		250		255
Thr Ser Gly Asp Tyr Arg Ile Phe His Val Asp Lys Asn Gly Lys Arg						
	260			265		270
Leu Ser His Ile Ile Asn Pro Asn Asn Lys Arg Pro Ile Ser His Asn						
	275			280		285
Leu Ala Ser Ile Ser Val Val Ala Asp Ser Ala Met Thr Ala Asp Gly						
	290			295		300
Leu Ser Thr Gly Leu Phe Val Leu Gly Glu Thr Glu Ala Leu Lys Leu						
	305			310		315
Ala Glu Arg Glu Lys Leu Ala Val Phe Leu Ile Val Arg Asp Lys Gly						
		325		330		335
Gly Tyr Arg Thr Ala Met Ser Ser Glu Phe Glu Lys Leu Leu Arg						
	340			345		350

<210> 397

<211> 1056

<212> DNA

<213> Neisseria meningitidis

<400> 397

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atgccgtctg aaacacgcct gccgaacttt atccgcacct tgatatttgc cctgagtttt 60
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atgggcacga cctataccgt caaatacctt tcaaataatc gggacaaact cccctcacct 180
gccgaaatac aaaagcgcat cgatgacgcg cttaaagaag tcaaccggca gatgtccacc 240
tatcagcccg actccgaaat cagccggttc aaccaacaca cagccggcaa gccccccgc 300
atttcaagcg acttcgcaca cgttactgcc gaagccgtcc acctgaaccg cctgacacac 360
ggcgcgctgg acgtaaccgt cgcccccttg gtcaaccttt ggggattcgg ccccgacaaa 420
tccgttacct gtgaaccgtc gccggaacaa atcaaacaag cagcatctta tacgggcata 480
gacaaaatca ttttgaaaca aggcaaagat tacgcttcct tgagcaaaac ccacccaag 540
gcctatttgg atttatcttc gattgccaaa ggcttcggcg ttgataaagt tgcgggcgaa 600
ctggaaaaat acggcattca aaattatctg gtcgaaatcg gcggcgagtt gcacggcaaa 660
ggcaaaaaacg cgcgcggcga accttggcgc atcggcatcg aacagcccaa catcgtccaa 720

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ggcggcaata cgcagattat cgtcccgtg aacaaccgtt cgcttgccac ttccggcgat 780
taccgtattt tccacgtcga taaaagcggc aaacgcctct cccatatcat taatccgaac 840
aacaaacgac ccatcagcca caacctcgcc tccatcagcg tggtcgcaga cagtgcgatg 900
acggcggacg gcttgtccac aggattattc gtattgggcg aaaccgaagc cttaaagctg 960
gcagagcgcg aaaaactcgc tgttttcctg attgtcaggg ataaaggcgg ctaccgcacc 1020
gccatgtctt ccgaatttga aaaactgctc cgctaa 1056

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<210> 398

<211> 351

<212> PRT

<213> *Neisseria meningitidis*

<400> 398

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Met Pro Ser Glu Thr Arg Leu Pro Asn Phe Ile Arg Thr Leu Ile Phe
 1          5          10         15

Ala Leu Ser Phe Ile Phe Leu Asn Ala Cys Ser Glu Gln Thr Ala Gln
      20          25          30

Thr Val Thr Leu Gln Gly Glu Thr Met Gly Thr Thr Tyr Thr Val Lys
      35          40          45

Tyr Leu Ser Asn Asn Arg Asp Lys Leu Pro Ser Pro Ala Glu Ile Gln
      50          55          60

Lys Arg Ile Asp Asp Ala Leu Lys Glu Val Asn Arg Gln Met Ser Thr
      65          70          75          80

Tyr Gln Pro Asp Ser Glu Ile Ser Arg Phe Asn Gln His Thr Ala Gly
      85          90          95

Lys Pro Leu Arg Ile Ser Ser Asp Phe Ala His Val Thr Ala Glu Ala
      100         105         110

Val His Leu Asn Arg Leu Thr His Gly Ala Leu Asp Val Thr Val Gly
      115         120         125

Pro Leu Val Asn Leu Trp Gly Phe Gly Pro Asp Lys Ser Val Thr Arg
      130         135         140

Glu Pro Ser Pro Glu Gln Ile Lys Gln Ala Ala Ser Tyr Thr Gly Ile
      145         150         155         160

Asp Lys Ile Ile Leu Lys Gln Gly Lys Asp Tyr Ala Ser Leu Ser Lys
      165         170         175

Thr His Pro Lys Ala Tyr Leu Asp Leu Ser Ser Ile Ala Lys Gly Phe
      180         185         190

Gly Val Asp Lys Val Ala Gly Glu Leu Glu Lys Tyr Gly Ile Gln Asn
      195         200         205

Tyr Leu Val Glu Ile Gly Gly Glu Leu His Gly Lys Gly Lys Asn Ala
      210         215         220

Arg Gly Glu Pro Trp Arg Ile Gly Ile Glu Gln Pro Asn Ile Val Gln

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225		230		235		240
Gly Gly Asn Thr	Gln Ile Ile Val	Pro Leu Asn Asn Arg	Ser Leu Ala			
	245	250	255			
Thr Ser Gly Asp Tyr Arg Ile Phe His Val Asp Lys Ser Gly Lys Arg						
	260	265	270			
Leu Ser His Ile Ile Asn Pro Asn Asn Lys Arg Pro Ile Ser His Asn						
	275	280	285			
Leu Ala Ser Ile Ser Val Val Ala Asp Ser Ala Met Thr Ala Asp Gly						
	290	295	300			
Leu Ser Thr Gly Leu Phe Val Leu Gly Glu Thr Glu Ala Leu Lys Leu						
305	310	315	320			
Ala Glu Arg Glu Lys Leu Ala Val Phe Leu Ile Val Arg Asp Lys Gly						
	325	330	335			
Gly Tyr Arg Thr Ala Met Ser Ser Glu Phe Glu Lys Leu Leu Arg						
	340	345	350			

<210> 399
 <211> 1056
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 399
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 atgggtacga cctataccgt caaataacct tcaaataatc gggacaaaact cccctccct 180
 gccaaaatac aaaagcgcct tgatgatgcg cttaaagaag tcaaccggca gatgtccacc 240
 taccagaccg attccgaaat cagccgggttc aaccaacaca cagccggcaa gccctccgc 300
 atttcaagcg atttcgcaca cgttaccgcc gaagccgtcc gcctgaaccg cctgactcac 360
 ggcgcactgg acgtaaccgt cggccctttg gtcaaccttt ggggggttcg ccccgacaaa 420
 tccgttaccg gtgaaccgtc gccggaacaa atcaaacagg cggcatctta tacgggcata 480
 gacaaaatca ttttgcaaca aggcaaagat tacgcttcct tgagcaaaac ccaccccaaa 540
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 ctggaaaaat acggcattca aaattatctg gtcgaaatcg gcggcgagtt gcacggcaaa 660
 ggcaaaaatg cgcacggcga accgtggcgc atcggtatag agcaaccctaa tatcatccaa 720
 ggcggaata cgcagattat cgtcccgtg aacaaccgtt cgcttgccac ttccggcgat 780
 taccgtatatt tccacgtcga taaaaacggc aaacgccttt cccacatcat caatcccaac 840
 aacaaacgac ccatcagcca caacctcgcc tccatcagcg tggctctcaga cagtgcgaatg 900
 acggcggacg gtttatccac aggattatatt gttttaggcg aaaccgaagc cttaaggctg 960
 gcagaacaag aaaaactcgc tgttttccta attgtccggg ataaggacgg ctaccgcacc 1020
 gccatgtctt ccgaatttgc caagctgctc cgctaa 1056

<210> 400
 <211> 351
 <212> PRT
 <213> Neisseria gonorrhoeae

<400> 400
 Met Pro Ser Glu Thr Arg Leu Pro Asn Leu Ile Arg Ala Leu Ile Phe

1	5	10	15
Ala Leu Gly Phe Ile Phe Leu Asn Ala Cys Ser Glu Gln Thr Ala Gln	20	25	30
Thr Val Thr Leu Gln Gly Glu Thr Met Gly Thr Thr Tyr Thr Val Lys	35	40	45
Tyr Leu Ser Asn Asn Arg Asp Lys Leu Pro Ser Pro Ala Lys Ile Gln	50	55	60
Lys Arg Ile Asp Asp Ala Leu Lys Glu Val Asn Arg Gln Met Ser Thr	65	70	75
Tyr Gln Thr Asp Ser Glu Ile Ser Arg Phe Asn Gln His Thr Ala Gly	85	90	95
Lys Pro Leu Arg Ile Ser Ser Asp Phe Ala His Val Thr Ala Glu Ala	100	105	110
Val Arg Leu Asn Arg Leu Thr His Gly Ala Leu Asp Val Thr Val Gly	115	120	125
Pro Leu Val Asn Leu Trp Gly Phe Gly Pro Asp Lys Ser Val Thr Arg	130	135	140
Glu Pro Ser Pro Glu Gln Ile Lys Gln Ala Ala Ser Tyr Thr Gly Ile	145	150	155
Asp Lys Ile Ile Leu Gln Gln Gly Lys Asp Tyr Ala Ser Leu Ser Lys	165	170	175
Thr His Pro Lys Ala Tyr Leu Asp Leu Ser Ser Ile Ala Lys Gly Phe	180	185	190
Gly Val Asp Lys Val Ala Gly Glu Leu Glu Lys Tyr Gly Ile Gln Asn	195	200	205
Tyr Leu Val Glu Ile Gly Gly Glu Leu His Gly Lys Gly Lys Asn Ala	210	215	220
His Gly Glu Pro Trp Arg Ile Gly Ile Glu Gln Pro Asn Ile Ile Gln	225	230	235
Gly Gly Asn Thr Gln Ile Ile Val Pro Leu Asn Asn Arg Ser Leu Ala	245	250	255
Thr Ser Gly Asp Tyr Arg Ile Phe His Val Asp Lys Asn Gly Lys Arg	260	265	270
Leu Ser His Ile Ile Asn Pro Asn Asn Lys Arg Pro Ile Ser His Asn	275	280	285
Leu Ala Ser Ile Ser Val Val Ser Asp Ser Ala Met Thr Ala Asp Gly	290	295	300
Leu Ser Thr Gly Leu Phe Val Leu Gly Glu Thr Glu Ala Leu Arg Leu			

305 310 315 320

Ala Glu Gln Glu Lys Leu Ala Val Phe Leu Ile Val Arg Asp Lys Asp
 325 330 335

Gly Tyr Arg Thr Ala Met Ser Ser Glu Phe Ala Lys Leu Leu Arg
 340 345 350

<210> 401
 <211> 1056
 <212> DNA
 <213> Neisseria meningitidis

<400> 401

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atcttctctga acgcctgttc ggaacaaacc gcgcaaacgc ttaccctgca aggcgaaacg 120
atgggcacga cctataccgt caaataccct tcaaataatc gggacaaact cccctcacct 180
gccgaaatac aaaaacgcat cgatgacgcg cttaaagaag tcaaccggca gatgtccacc 240
tatcagcccg actccgaaat cagccggttc aaccaacaca cagccggcaa gcccctccgc 300
atctcaagcg acttcgcaca cgttactgcc gaagccgtcc gcctgaaccg cctgacacac 360
ggcgcgctgg acgtaaccgt cggccccttg gtcaaccttt ggggattcgg ccccgacaaa 420
tccgttaccc gtgaaccgtc gccggaacaa atcaaacagg cggcatctta tacgggcata 480
gacaaaatca ttttgaaaca aggcaaagat tacgcttcct tgagcaaaac ccacccaag 540
gcctatttgg atttatcttc gattgccaaa ggcttcggcg ttgataaagt tgcgggcgaa 600
ctggaaaaat acggcattca aaattatctg gtcgaaatcg gcggcgagtt gcacggcaaa 660
ggcaaaaacg cgcgcggcga accgtggcgc atcggtatcg agcagcccaa tatcgtccaa 720
ggcggcaata cgcagattat cgtcccgtg aacaaccgtt cgcttgccac ttccggcgat 780
taccgtatatt tccacgtcga taaaaacggc aaacgcctct cccatatcat caaccgaac 840
aacaacacgac ccacagcca caacctcgcc tccatcagcg tggtcgcaga cagtgcgatg 900
acggcggacg gcttgtccac aggattattc gtattgggcg aaaccgaagc cttaaagctg 960
gcagagcgcg aaaaactcgc tgttttcctg attgtcaggg ataaaggcgg ctaccgcacc 1020
gccatgtctt ccgaatttga aaaactgctc cgctaa 1056
  
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<210> 402
 <211> 351
 <212> PRT
 <213> Neisseria meningitidis

<400> 402

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Met Pro Ser Glu Thr Arg Leu Pro Asn Phe Ile Arg Val Leu Ile Phe
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Ala Leu Gly Phe Ile Phe Leu Asn Ala Cys Ser Glu Gln Thr Ala Gln
                                   20                      25                      30

Thr Val Thr Leu Gln Gly Glu Thr Met Gly Thr Thr Tyr Thr Val Lys
                                   35                      40                      45

Tyr Leu Ser Asn Asn Arg Asp Lys Leu Pro Ser Pro Ala Glu Ile Gln
                                   50                      55                      60

Lys Arg Ile Asp Asp Ala Leu Lys Glu Val Asn Arg Gln Met Ser Thr
                                   65                      70                      75                      80

Tyr Gln Pro Asp Ser Glu Ile Ser Arg Phe Asn Gln His Thr Ala Gly
  
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85

90

95

Lys Pro Leu Arg Ile Ser Ser Asp Phe Ala His Val Thr Ala Glu Ala
 100 105 110

Val Arg Leu Asn Arg Leu Thr His Gly Ala Leu Asp Val Thr Val Gly
 115 120 125

Pro Leu Val Asn Leu Trp Gly Phe Gly Pro Asp Lys Ser Val Thr Arg
 130 135 140

Glu Pro Ser Pro Glu Gln Ile Lys Gln Ala Ala Ser Tyr Thr Gly Ile
 145 150 155 160

Asp Lys Ile Ile Leu Lys Gln Gly Lys Asp Tyr Ala Ser Leu Ser Lys
 165 170 175

Thr His Pro Lys Ala Tyr Leu Asp Leu Ser Ser Ile Ala Lys Gly Phe
 180 185 190

Gly Val Asp Lys Val Ala Gly Glu Leu Glu Lys Tyr Gly Ile Gln Asn
 195 200 205

Tyr Leu Val Glu Ile Gly Gly Glu Leu His Gly Lys Gly Lys Asn Ala
 210 215 220

Arg Gly Glu Pro Trp Arg Ile Gly Ile Glu Gln Pro Asn Ile Val Gln
 225 230 235 240

Gly Gly Asn Thr Gln Ile Ile Val Pro Leu Asn Asn Arg Ser Leu Ala
 245 250 255

Thr Ser Gly Asp Tyr Arg Ile Phe His Val Asp Lys Asn Gly Lys Arg
 260 265 270

Leu Ser His Ile Ile Asn Pro Asn Asn Lys Arg Pro Ile Ser His Asn
 275 280 285

Leu Ala Ser Ile Ser Val Val Ala Asp Ser Ala Met Thr Ala Asp Gly
 290 295 300

Leu Ser Thr Gly Leu Phe Val Leu Gly Glu Thr Glu Ala Leu Lys Leu
 305 310 315 320

Ala Glu Arg Glu Lys Leu Ala Val Phe Leu Ile Val Arg Asp Lys Gly
 325 330 335

Gly Tyr Arg Thr Ala Met Ser Ser Glu Phe Glu Lys Leu Leu Arg
 340 345 350

<210> 403

<211> 1056

<212> DNA

<213> Neisseria meningitidis

<400> 403

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atgggcacga cctataccgt caaataccct tcaaataatc gggacaaaact cccctcacct 180
gccgaaatac aaaagcgcat cgatgacgcg cttaaagaag tcaaccggca gatgtccacc 240
tatcagcccg actccgaaat cagccgggtc aaccaacaca cagccggcaa gccctccgc 300
atttcaagcg acttcgcaca cgttactgcc gaagccgtcc acctgaaccg cctgacacac 360
ggcgcgctgg acgtaaccgt cggccccttg gtcaaccttt ggggattcgg ccccgacaaa 420
tccgttaccg gtgaaccgtc gccggaacaa atcaaacaag cagcatctta tacgggcata 480
gacaaaatca ttttgaaaca aggcaaagat tacgcttcct tgagcaaaac ccacccaag 540
gcctatttgg atttatcttc gattgccaaa ggcttcggcg ttgataaagt tgcgggcgaa 600
ctggaaaaat acggcattca aaattatctg gtcgaaatcg gcggcgagtt gcacggcaaa 660
ggcaaaaacg cgcgcggcga accttggcgc atcggcatcg aacagcccaa catcgtccaa 720
ggcggcaata cgcagattat cgtcccgtcg aacaaccgtt cgcttgccac ttccggcgat 780
taccgtatth tccacgtcga taaaagcggc aaacgcctct cccatcatcat taatccgaac 840
aacaacgac ccacagcca caacctcgcc tccatcagcg tggtcgcaga cagtgcgatg 900
acggcggacg gcttgtccac aggattatc gtattggcg aaaccgaagc cttaaagctg 960
gcagagcgcg aaaaactcgc tgttttcctg attgtcaggg ataaaggcgg ctaccgcacc 1020
gccatgtctt ccgaatttga aaaactgctc cgctaa 1056
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<210> 404

<211> 351

<212> PRT

<213> Neisseria meningitidis

<400> 404

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Met Pro Ser Glu Thr Arg Leu Pro Asn Phe Ile Arg Thr Leu Ile Phe
  1             5             10             15

Ala Leu Ser Phe Ile Phe Leu Asn Ala Cys Ser Glu Gln Thr Ala Gln
  20             25             30

Thr Val Thr Leu Gln Gly Glu Thr Met Gly Thr Thr Tyr Thr Val Lys
  35             40             45

Tyr Leu Ser Asn Asn Arg Asp Lys Leu Pro Ser Pro Ala Glu Ile Gln
  50             55             60

Lys Arg Ile Asp Asp Ala Leu Lys Glu Val Asn Arg Gln Met Ser Thr
  65             70             75             80

Tyr Gln Pro Asp Ser Glu Ile Ser Arg Phe Asn Gln His Thr Ala Gly
  85             90             95

Lys Pro Leu Arg Ile Ser Ser Asp Phe Ala His Val Thr Ala Glu Ala
 100             105             110

Val His Leu Asn Arg Leu Thr His Gly Ala Leu Asp Val Thr Val Gly
 115             120             125

Pro Leu Val Asn Leu Trp Gly Phe Gly Pro Asp Lys Ser Val Thr Arg
 130             135             140

Glu Pro Ser Pro Glu Gln Ile Lys Gln Ala Ala Ser Tyr Thr Gly Ile
 145             150             155             160
```

Asp Lys Ile Ile Leu Lys Gln Gly Lys Asp Tyr Ala Ser Leu Ser Lys
 165 170 175
 Thr His Pro Lys Ala Tyr Leu Asp Leu Ser Ser Ile Ala Lys Gly Phe
 180 185 190
 Gly Val Asp Lys Val Ala Gly Glu Leu Glu Lys Tyr Gly Ile Gln Asn
 195 200 205
 Tyr Leu Val Glu Ile Gly Gly Glu Leu His Gly Lys Gly Lys Asn Ala
 210 215 220
 Arg Gly Glu Pro Trp Arg Ile Gly Ile Glu Gln Pro Asn Ile Val Gln
 225 230 235 240
 Gly Gly Asn Thr Gln Ile Ile Val Pro Leu Asn Asn Arg Ser Leu Ala
 245 250 255
 Thr Ser Gly Asp Tyr Arg Ile Phe His Val Asp Lys Ser Gly Lys Arg
 260 265 270
 Leu Ser His Ile Ile Asn Pro Asn Asn Lys Arg Pro Ile Ser His Asn
 275 280 285
 Leu Ala Ser Ile Ser Val Val Ala Asp Ser Ala Met Thr Ala Asp Gly
 290 295 300
 Leu Ser Thr Gly Leu Phe Val Leu Gly Glu Thr Glu Ala Leu Lys Leu
 305 310 315 320
 Ala Glu Arg Glu Lys Leu Ala Val Phe Leu Ile Val Arg Asp Lys Gly
 325 330 335
 Gly Tyr Arg Thr Ala Met Ser Ser Glu Phe Glu Lys Leu Leu Arg
 340 345 350

<210> 405

<211> 423

<212> DNA

<213> Neisseria gonorrhoeae

<400> 405

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 gtttccatta acttaacaat atctgtcgaa tacggtcaaa gcggctatatt taccagagcc 180
 gccgaatgta aaacaggggtg tcagggcatc agcccagagct gcctgaacga acggacgggtt 240
 tgcgaggtaa cgataaaatg gtcgagcagc gaaacatcaa ccagcgacat ggcctgtgcc 300
 agccgccttg tgaacatgat gtcttctctg gaaggttcag gcgagccgcc cggatgggtg 360
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 taa 423

<210> 406

<211> 140

<212> PRT

<213> Neisseria gonorrhoeae

<400> 406

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Met Ala Ser Ile Thr Ser Pro Leu His Gly Ala Gln Gln Glu Cys Ser
  1             5             10             15

Lys Thr Phe Leu Cys Pro Pro Gly Gly Thr Ser Met Gly Arg Ser Met
          20             25             30

Ser Val Thr Val Gly Leu Phe Cys Val Ser Ile Asn Leu Thr Ile Ser
          35             40             45

Val Glu Tyr Gly Gln Ser Gly Tyr Phe Thr Arg Ala Ala Glu Cys Lys
          50             55             60

Thr Gly Cys Gln Gly Ile Ser Pro Ser Cys Leu Asn Glu Arg Thr Val
          65             70             75             80

Cys Glu Val Thr Ile Lys Trp Ser Ser Ser Glu Thr Ser Thr Ser Asp
          85             90             95

Met Ala Cys Ala Ser Arg Leu Val Asn Met Met Ser Ser Cys Glu Gly
          100            105            110

Ser Gly Glu Pro Pro Gly Trp Leu Cys Ala Ile Ile Arg Leu Ser Ala
          115            120            125

Tyr Ser Ser Asn Ala Ser Leu Thr Ile Ser Arg Met
          130            135            140
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<210> 407

<211> 423

<212> DNA

<213> Neisseria meningitidis

<400> 407

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tgtccaccgg gcgggacgag tatagggcgg tcaatgtcgg taacggtagg tttgttttgt 120
gtttccatta acttaacaat atctgttgaa tacggttgaa gcggctatgt tatcagagcc 180
gccgcatgta aaacagagtg tcagggcatc aacccgagct gtctgaacga acagacgctt 240
tgcgakgtaa cgataaaatg gtcgagcagc gacacatcga ccagcgacat tgcctgtgcc 300
agccgccttg tgaacatgat gtcttcctgc gaargttcsg gcgagccgcc cggatggttg 360
tgcgcaataa tcaggctgtc ggcatattcg tccaatgcca gtttgacgat ttcgcgggatg 420
taa                                                    423
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<210> 408

<211> 140

<212> PRT

<213> Neisseria meningitidis

<400> 408

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Met Ala Ser Ile Thr Ser Pro Leu His Gly Ala His Arg Glu Cys Ser
  1             5             10             15

Lys Thr Phe Leu Cys Pro Pro Gly Gly Thr Ser Ile Gly Arg Ser Met
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20 25 30
 Ser Val Thr Val Gly Leu Phe Cys Val Ser Ile Asn Leu Thr Ile Ser
 35 40 45
 Val Glu Tyr Gly Xaa Ser Gly Tyr Phe Ile Arg Ala Ala Ala Cys Lys
 50 55 60
 Thr Glu Cys Gln Gly Ile Asn Pro Ser Cys Leu Asn Glu Gln Thr Leu
 65 70 75 80
 Cys Xaa Val Thr Ile Lys Trp Ser Ser Ser Asp Thr Ser Thr Ser Asp
 85 90 95
 Ile Ala Cys Ala Ser Arg Leu Val Asn Met Met Ser Ser Cys Glu Xaa
 100 105 110
 Ser Gly Glu Pro Pro Gly Trp Leu Cys Ala Ile Ile Arg Leu Ser Ala
 115 120 125
 Tyr Ser Ser Asn Ala Ser Leu Thr Ile Ser Arg Met
 130 135 140

<210> 409
 <211> 438
 <212> DNA
 <213> *Neisseria gonorrhoeae*

<400> 409
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 gtaggtttgt tttgtgtttc cattaactta acgatatctg tcgaatacgg ttgaagcggc 180
 tattttatca gagccgccgc atgtaaaaca ggggtgtcagg gcatcagccc gagctgcctg 240
 aacgaacgga cggtttgccg cgttacgata aaatggtcga gcagcgacac atcgaccagc 300
 gacattgcct gtgccagccg ccttgtgaac atgatgtctt cctgcgaagg ttcgggcgag 360
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 acaatttcac ggatgtaa 438

<210> 410
 <211> 144
 <212> PRT
 <213> *Neisseria gonorrhoeae*

<400> 410
 Met Pro Glu Ala Ser Ile Ala Ser Ile Thr Ser Pro Leu His Gly Ala
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 Gln Gln Glu Cys Ser Lys Thr Phe Leu Cys Pro Pro Gly Gly Thr Ser
 20 25 30
 Met Gly Arg Ser Met Ser Val Thr Val Gly Leu Phe Cys Val Ser Ile
 35 40 45
 Asn Leu Thr Ile Ser Val Glu Tyr Gly Ser Gly Tyr Phe Ile Arg Ala
 50 55 60

Ala Ala Cys Lys Thr Gly Cys Gln Gly Ile Ser Pro Ser Cys Leu Asn
65 70 75 80

Glu Arg Thr Val Cys Ala Val Thr Ile Lys Trp Ser Ser Ser Asp Thr
85 90 95

Ser Thr Ser Asp Ile Ala Cys Ala Ser Arg Leu Val Asn Met Met Ser
100 105 110

Ser Cys Glu Gly Ser Gly Glu Pro Pro Gly Trp Leu Cys Ala Ile Ile
115 120 125

Arg Leu Ser Ala Tyr Ser Ser Asn Ala Ser Leu Thr Ile Ser Arg Met
130 135 140

<210> 411
<211> 2007
<212> DNA
<213> Neisseria gonorrhoeae

<400> 411

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gagctggtca	aaggtgtgga	cgaagtgcag	aaacttaccc	acttcgcccg	ggtggacagc	180
ctcgccacgc	cgaagaacg	cgcacagcaa	gcggaacca	tgcggaatat	gctgctggcg	240
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aaaaaataca	atatccactt	tgaagtcgcc	ggccgtccga	aacacatcta	ctccatttac	600
aaaaaaatgg	tgaagaaaaa	actcagcttc	gacggcctgt	tcgacatccg	cgccgtgcgc	660
attctggtcg	ataccgtccc	cgagtgttac	accacgctgg	gcacgtccca	cagcctctgg	720
cagcccattc	ccggcgagtt	cgacgactac	atcgccaaac	ccaaaggcaa	cggttataaa	780
agtttgcaca	ccgtcatcgt	cggcccggaa	gacaaaagtg	tggaagtgca	aatccgcacc	840
ttcgatatgc	accaattcaa	cgaattcggg	gtcgccgccc	actggcggtta	caaagaaggc	900
ggcaaaaggc	attccgccta	cgaacaaaaa	atcgctgggt	tgcgccaact	cttggactgg	960
cgcgaaaata	tggcggaaaag	cggcaaggaa	gacctcgccg	ccgccttcaa	aaccgagctt	1020
ttcaacgaca	cgatttatgt	tttgaccccg	cacggcaaaag	tcctctctct	gccaacgggc	1080
gcaacccccca	tcgaacttcgc	ctacgccttg	cacagcagca	tcggcgaccg	ctgccggggc	1140
gcgaaagtgc	aagggcagat	tgtgccgctg	tccaccccg	tcgaaaacgc	acagcgcgtc	1200
gaaatcatta	ccgccaaga	agggcatcct	tccgtcaact	ggctttacga	aggctgggtc	1260
aaatccggca	aggccatcgg	caaaatccgc	gcctacatcc	gccagcaaaa	cgccgacacc	1320
gtgcgcgaag	aaggccgtgt	ccaactcgac	aagcagcttg	ccaaactcac	gcccaaacc	1380
aacctgcaag	agcttgccga	aaatctcggc	tacaaaaagc	cagaagacct	ctacaccgcc	1440
gtcggacaag	gcgaaatttc	caaccgcgcc	atccaaaaag	cctgcggcac	gctgaacgaa	1500
ccgccccccg	tgcccgtcag	cgcaaccacc	atcgtaaac	agtccaaaat	caaaaaaggt	1560
ggcaaaaccg	gcgtgctcat	cgacggcgaa	gacggcttga	tgaccacgct	tgccaaatgc	1620
tgcaaacccg	cgccgcccga	cgatattgcc	ggcttcgtta	cccgcgagcg	cggcatttcc	1680
gtccaccgca	aaacctgccc	ctctttccga	caccttgccg	aacacgcgcc	cgaaaaagta	1740
ctggacgcaa	gttgggcggc	gttgcaggaa	gggcaagtgt	tcgccgtcga	tatcgaaatc	1800
cgcgcccaag	accgctccgg	gcttttgccg	gacgtatccg	acgcgctcgc	ccgccacaaa	1860

ctcaacgtta ccgcctgca aacccagtcg cgcgacttgg aagccagcat gaggttcacg 1920
 ctggaagtca aacaagtcaa cgacctcccg cgcgctctcg ccggcctcgg cgatgtcaaa 1980
 ggcgtattga gcgttaccg gctttaa 2007

<210> 412
 <211> 668
 <212> PRT
 <213> Neisseria gonorrhoeae

<400> 412
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 35 40 45
 Val Gln Lys Leu Thr His Phe Ala Arg Val Asp Ser Leu Ala Thr Pro
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 Glu Glu Arg Ala Gln Gln Ala Glu Thr Met Arg Lys Met Leu Leu Ala
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 Met Val Thr Asp Ile Arg Val Val Leu Ile Lys Leu Ala Met Arg Thr
 85 90 95
 Arg Thr Leu Leu Phe Leu Ser Asn Ala Pro Asp Ser Pro Glu Lys Arg
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 Ala Val Ala Lys Glu Thr Leu Asp Ile Phe Ala Pro Leu Ala Asn Arg
 115 120 125
 Leu Gly Val Trp Gln Leu Lys Trp Gln Leu Glu Asp Leu Gly Phe Arg
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 His Gln Glu Pro Glu Lys Tyr Arg Glu Ile Ala Leu Leu Leu Asp Glu
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 Lys Arg Thr Glu Arg Leu Glu Tyr Ile Glu Asn Phe Leu Asp Ile Leu
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 Arg Thr Glu Leu Lys Lys Tyr Asn Ile His Phe Glu Val Ala Gly Arg
 180 185 190
 Pro Lys His Ile Tyr Ser Ile Tyr Lys Lys Met Val Lys Lys Lys Leu
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 Ser Phe Asp Gly Leu Phe Asp Ile Arg Ala Val Arg Ile Leu Val Asp
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 Thr Val Pro Glu Cys Tyr Thr Thr Leu Gly Ile Val His Ser Leu Trp
 225 230 235 240
 Gln Pro Ile Pro Gly Glu Phe Asp Asp Tyr Ile Ala Asn Pro Lys Gly

245	250	255
Asn Gly Tyr Lys Ser Leu His Thr Val Ile Val Gly Pro Glu Asp Lys 260 265 270		
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Phe Gly Val Ala Ala His Trp Arg Tyr Lys Glu Gly Gly Lys Gly Asp 290 295 300		
Ser Ala Tyr Glu Gln Lys Ile Ala Trp Leu Arg Gln Leu Leu Asp Trp 305 310 315 320		
Arg Glu Asn Met Ala Glu Ser Gly Lys Glu Asp Leu Ala Ala Ala Phe 325 330 335		
Lys Thr Glu Leu Phe Asn Asp Thr Ile Tyr Val Leu Thr Pro His Gly 340 345 350		
Lys Val Leu Ser Leu Pro Thr Gly Ala Thr Pro Ile Asp Phe Ala Tyr 355 360 365		
Ala Leu His Ser Ser Ile Gly Asp Arg Cys Arg Gly Ala Lys Val Glu 370 375 380		
Gly Gln Ile Val Pro Leu Ser Thr Pro Leu Glu Asn Gly Gln Arg Val 385 390 395 400		
Glu Ile Ile Thr Ala Lys Glu Gly His Pro Ser Val Asn Trp Leu Tyr 405 410 415		
Glu Gly Trp Val Lys Ser Gly Lys Ala Ile Gly Lys Ile Arg Ala Tyr 420 425 430		
Ile Arg Gln Gln Asn Ala Asp Thr Val Arg Glu Glu Gly Arg Val Gln 435 440 445		
Leu Asp Lys Gln Leu Ala Lys Leu Thr Pro Lys Pro Asn Leu Gln Glu 450 455 460		
Leu Ala Glu Asn Leu Gly Tyr Lys Lys Pro Glu Asp Leu Tyr Thr Ala 465 470 475 480		
Val Gly Gln Gly Glu Ile Ser Asn Arg Ala Ile Gln Lys Ala Cys Gly 485 490 495		
Thr Leu Asn Glu Pro Pro Pro Val Pro Val Ser Ala Thr Thr Ile Val 500 505 510		
Lys Gln Ser Lys Ile Lys Lys Gly Gly Lys Thr Gly Val Leu Ile Asp 515 520 525		
Gly Glu Asp Gly Leu Met Thr Thr Leu Ala Lys Cys Cys Lys Pro Ala 530 535 540		
Pro Pro Asp Asp Ile Ala Gly Phe Val Thr Arg Glu Arg Gly Ile Ser		

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<211> 491
<212> PRT
<213> Neisseria meningitidis

<400> 414

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Ala Glu Asn Leu Gly Tyr Lys Lys Pro Glu Asp Leu Tyr Thr Ala Val
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Gly Gln Gly Glu Ile Ser Asn Arg Ala Ile Gln Lys Ala Cys Gly Thr
305 310 315 320

Leu Asn Glu Pro Pro Pro Val Pro Val Ser Glu Thr Thr Ile Val Lys
325 330 335

Gln Ser Lys Ile Lys Lys Gly Gly Lys Asn Gly Val Leu Ile Asp Gly
340 345 350

Glu Asp Gly Leu Met Thr Thr Leu Ala Lys Cys Cys Lys Pro Ala Pro
355 360 365

Pro Asp Asp Ile Ile Gly Phe Val Thr Arg Glu Arg Gly Ile Ser Val
370 375 380

His Arg Lys Xaa Xaa Xaa Ser Phe Gln His Leu Ala Glu His Ala Pro
385 390 395 400

Xaa Lys Val Leu Asp Ala Ser Trp Ala Ala Leu Gln Glu Gly Gln Val
405 410 415

Phe Ala Val Asp Ile Glu Ile Arg Ala Gln Asp Arg Ser Gly Leu Leu
420 425 430

Arg Asp Val Ser Asp Ala Leu Ala Arg His Lys Leu Asn Val Thr Ala
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Val Gln Thr Gln Ser Arg Asp Leu Glu Ala Ser Met Arg Phe Thr Leu
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Asp Val Lys Gly Val Leu Ser Val Thr Arg Leu
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<210> 415

<211> 2007

<212> DNA

<213> Neisseria meningitidis

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<210> 416

<211> 668

<212> PRT

<213> Neisseria meningitidis

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 35              40             45

Val Gln Lys Leu Thr His Phe Ala Arg Val Asp Ser Leu Ala Thr Pro
 50              55             60

Glu Glu Arg Ala Gln Gln Ala Glu Thr Met Arg Lys Met Leu Leu Ala
 65              70             75             80

Met Val Thr Asp Ile Arg Val Val Leu Ile Lys Leu Ala Met Arg Thr
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Arg Thr Leu Gln Phe Leu Ser Asn Ala Pro Asp Ser Pro Glu Lys Arg
100             105            110

Ala Val Ala Lys Glu Thr Leu Asp Ile Phe Ala Pro Leu Ala Asn Arg

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Pro	Lys	His	Ile	Tyr	Ser	Ile	Tyr	Lys	Lys	Met	Val	Lys	Lys	Lys	Leu
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Ser	Phe	Asp	Gly	Leu	Phe	Asp	Ile	Arg	Ala	Val	Arg	Ile	Leu	Val	Asp
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Leu	Ala	Glu	Asn	Leu	Gly	Tyr	Lys	Lys	Pro	Glu	Asp	Leu	Tyr	Thr	Ala				
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Thr	Leu	Asn	Glu	Pro	Pro	Pro	Val	Pro	Val	Ser	Glu	Thr	Thr	Ile	Val				
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Lys	Gln	Ser	Lys	Ile	Lys	Lys	Gly	Gly	Lys	Asn	Gly	Val	Leu	Ile	Asp				
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Leu	Arg	Asp	Val	Ser	Asp	Ala	Leu	Ala	Arg	His	Lys	Leu	Asn	Val	Thr				
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Ala	Val	Gln	Thr	Gln	Ser	Arg	Asp	Leu	Glu	Ala	Ser	Met	Arg	Phe	Thr				
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 <212> DNA
 <213> *Neisseria gonorrhoeae*

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caagtgttcg ccgtcgatat cgaaatccgc gcccaagacc gctccgggt tttcgcgac 2040
gtatccgacg cgctcgcccg ccacaaactc aacgttaccg ccgtgcaaac ccagtccgc 2100
gacttggaag ccagcatgag gttcacgctc gaagtcaaac aagtcaacga cctccgcgc 2160
gtcctcgccg gcctcggcga tgtcaaaggc gtattgagcg ttaccgggt ttaa 2214

```

<210> 418

<211> 737

<212> PRT

<213> Neisseria gonorrhoeae

<400> 418

Met Thr Ala Ile Ser Pro Ile Gln Asp Thr Gln Ser Ala Thr Leu Gln
1 5 10 15

Glu Leu Arg Glu Trp Phe Asp Ser Tyr Cys Ala Ala Leu Pro Asp Asn
20 25 30

Asp Lys Asn Leu Ile Gly Thr Ala Trp Ser Leu Ala Gln Glu His Tyr
35 40 45

Pro Ala Asp Ala Ala Thr Pro Tyr Gly Glu Pro Leu Pro Asp His Phe
50 55 60

Leu Gly Ala Ala Gln Met Val Asp Glu Leu Asp Leu Leu Pro Asp Ala
65 70 75 80

Val	Ala	Ala	Thr	Leu	Leu	Ala	Asp	Ile	Gly	Arg	Tyr	Val	Pro	Asp	Trp	85	90	95	
Asn	Leu	Leu	Val	Ser	Glu	Arg	Cys	Asn	Ser	Thr	Val	Ala	Glu	Leu	Val	100	105	110	
Lys	Gly	Val	Asp	Glu	Val	Gln	Lys	Leu	Thr	His	Phe	Ala	Arg	Val	Asp	115	120	125	
Ser	Leu	Ala	Thr	Pro	Glu	Glu	Arg	Ala	Gln	Gln	Ala	Glu	Thr	Met	Arg	130	135	140	
Lys	Met	Leu	Leu	Ala	Met	Val	Thr	Asp	Ile	Arg	Val	Val	Leu	Ile	Lys	145	150	155	160
Leu	Ala	Met	Arg	Thr	Arg	Thr	Leu	Gln	Phe	Leu	Ser	Asn	Ala	Pro	Asp	165	170	175	
Ser	Pro	Glu	Lys	Arg	Ala	Val	Ala	Lys	Glu	Thr	Leu	Asp	Ile	Phe	Ala	180	185	190	
Pro	Leu	Ala	Asn	Arg	Leu	Gly	Val	Trp	Gln	Leu	Lys	Trp	Gln	Leu	Glu	195	200	205	
Asp	Leu	Gly	Phe	Arg	His	Gln	Glu	Pro	Glu	Lys	Tyr	Arg	Glu	Ile	Ala	210	215	220	
Leu	Leu	Leu	Asp	Glu	Lys	Arg	Thr	Glu	Arg	Leu	Glu	Tyr	Ile	Glu	Asn	225	230	235	240
Phe	Leu	Asp	Ile	Leu	Arg	Thr	Glu	Leu	Lys	Lys	Tyr	Asn	Ile	His	Phe	245	250	255	
Glu	Val	Ala	Gly	Arg	Pro	Lys	His	Ile	Tyr	Ser	Ile	Tyr	Lys	Lys	Met	260	265	270	
Val	Lys	Lys	Lys	Leu	Ser	Phe	Asp	Gly	Leu	Phe	Asp	Ile	Arg	Ala	Val	275	280	285	
Arg	Ile	Leu	Val	Asp	Thr	Val	Pro	Glu	Cys	Tyr	Thr	Thr	Leu	Gly	Ile	290	295	300	
Val	His	Ser	Leu	Trp	Gln	Pro	Ile	Pro	Gly	Glu	Phe	Asp	Asp	Tyr	Ile	305	310	315	320
Ala	Asn	Pro	Lys	Gly	Asn	Gly	Tyr	Lys	Ser	Leu	His	Thr	Val	Ile	Val	325	330	335	
Gly	Pro	Glu	Glu	Lys	Gly	Val	Glu	Val	Gln	Ile	Arg	Thr	Phe	Asp	Met	340	345	350	
His	Gln	Phe	Asn	Glu	Phe	Gly	Val	Ala	Ala	His	Trp	Arg	Tyr	Lys	Glu	355	360	365	
Gly	Gly	Lys	Gly	Asp	Ser	Ala	Tyr	Glu	Gln	Lys	Ile	Ala	Trp	Leu	Arg	370	375	380	

Gln Leu Leu Asp Trp Arg Glu Asn Met Ala Glu Ser Gly Lys Glu Asp
 385 390 395 400
 Leu Ala Ala Ala Phe Lys Thr Glu Leu Phe Asn Asp Thr Ile Tyr Val
 405 410 415
 Leu Thr Pro His Gly Lys Val Leu Ser Leu Pro Thr Gly Ala Thr Pro
 420 425 430
 Ile Asp Phe Ala Tyr Ala Leu His Ser Ser Ile Gly Asp Arg Cys Arg
 435 440 445
 Gly Ala Lys Val Glu Gly Gln Ile Val Pro Leu Ser Thr Pro Leu Glu
 450 455 460
 Asn Gly Gln Arg Val Glu Ile Ile Thr Ala Lys Glu Gly His Pro Ser
 465 470 475 480
 Val Asn Trp Leu Tyr Glu Gly Trp Val Lys Ser Gly Lys Ala Ile Gly
 485 490 495
 Lys Ile Arg Ala Tyr Ile Arg Gln Gln Asn Ala Asp Thr Val Arg Glu
 500 505 510
 Glu Gly Arg Val Gln Leu Asp Lys Gln Leu Ala Lys Leu Thr Pro Lys
 515 520 525
 Pro Asn Leu Gln Glu Leu Ala Glu Asn Leu Gly Tyr Lys Lys Pro Glu
 530 535 540
 Asp Leu Tyr Thr Ala Val Gly Gln Gly Glu Ile Ser Asn Arg Ala Ile
 545 550 555 560
 Gln Lys Ala Cys Gly Thr Leu Asn Glu Pro Pro Pro Val Pro Val Ser
 565 570 575
 Ala Thr Thr Ile Val Lys Gln Ser Lys Ile Lys Lys Gly Gly Lys Thr
 580 585 590
 Gly Val Leu Ile Asp Gly Glu Asp Gly Leu Met Thr Thr Leu Ala Lys
 595 600 605
 Cys Cys Lys Pro Ala Pro Pro Asp Asp Ile Ala Gly Phe Val Thr Arg
 610 615 620
 Glu Arg Gly Ile Ser Val His Arg Lys Thr Cys Pro Ser Phe Arg His
 625 630 635 640
 Leu Ala Glu His Ala Pro Glu Lys Val Leu Asp Ala Ser Trp Ala Ala
 645 650 655
 Leu Gln Glu Gly Gln Val Phe Ala Val Asp Ile Glu Ile Arg Ala Gln
 660 665 670
 Asp Arg Ser Gly Leu Leu Arg Asp Val Ser Asp Ala Leu Ala Arg His

675		680		685
Lys Leu Asn Val Thr Ala Val Gln Thr Gln Ser Arg Asp Leu Glu Ala				
690		695		700
Ser Met Arg Phe Thr Leu Glu Val Lys Gln Val Asn Asp Leu Pro Arg				
705		710		715
				720
Val Leu Ala Gly Leu Gly Asp Val Lys Gly Val Leu Ser Val Thr Arg				
	725		730	735

Leu

<210> 419
 <211> 2214
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 419

atgaccgcca	tcagcccgat	tcaagacacg	caaagcgcg	ctctgcaaga	attgcgcgaa	60
tggttcgaca	gctactgcgc	cgctctgccc	gacaacgata	aaaacctcat	cggtaccgca	120
tggttgctgg	cgaggaaca	ttaccccgcc	gatgccgcca	cgccgtatgg	cgagccgctg	180
cccgaccact	tcctcggcgc	ggcgcaaatg	gttcatgaac	tcgacctgct	ccccgatgcc	240
gtcgccgcca	ccctgcttgc	cgacatcgga	cgctacgtcc	ccgactggaa	cctattggtt	300
tccgaacgct	gcaacagtac	cgtcgcccag	ctggtcaaag	gtgtggacga	agtgcagaaa	360
ctcaccact	tcgcccgggt	ggacagcctc	gccacgcccg	aagaacgcgc	ccagcaggca	420
gaaactatgc	ggaaaatgct	gctggcgatg	gttaccgaca	tcgcgctcgt	gttaatcaaa	480
ctggcgatgc	gtacgcgcac	cctgcaattt	ttaagcaacg	ccccgacag	ccccgaaaaa	540
cgcgccgctg	ccaaagaaac	cctcgacatc	ttcgccccgc	tcgccaaccg	tttgggcgtg	600
tggcagctca	aatggcagct	cgaagatttg	ggcttcgcgc	atcaaaaagg	cgaaaaatac	660
cgcgaaatcg	cgctgctttt	ggacgaaaaa	cgcaccgaac	gcctcgaata	catcgaaaac	720
ttcctcaaca	tcctgcgcgg	tgaactcaag	aaatacaatg	tccatttcga	agtcgcccgc	780
cgcccgaaac	acatctactc	catttcaaaa	aaaatggtga	agaaaaaact	cagcttcgcg	840
ggcctctttg	acatccgcgc	cgtgcgaatt	ctggttgata	ccgtccccga	gtgttacacc	900
acgctgggta	tcgtccacag	cctctggcag	cccattcccc	gcgagttcga	cgactacatc	960
gccaatccca	aaggcaacgg	ctataaaagt	ttgcacaccg	tcacgtcgcg	cccggaagac	1020
aaaggcgtgg	aagtacaaat	ccgcaccttc	gatatgcacc	aattcaacga	attcgggtgc	1080
gccgcccact	ggcggttaca	agaggcggcg	aagggcgatt	ccgcctacga	acagaaaaac	1140
gcctgggttg	gccaactctt	ggactggcgc	gaaaacatgg	cggaagcgcg	caagggaagc	1200
ctcgccgccc	ccttcaaaaac	cgagcttttc	aacgacacga	tttatgtttt	gaccccgcac	1260
ggcaaaagtcc	tctccctgcc	cacgggcgcg	acccccatcg	acttcgccta	cgccctgcac	1320
agcagcatcg	gcgaccgttg	ccgcggtgcg	aaagtcgaag	ggcagattgt	gccgctgtcc	1380
accccgctcg	aaaacggaca	gcgcgtcgaa	atcattaccg	ccaaagaagg	gcaccccttc	1440
gtcaactggc	tttacgaagg	ctgggtcaaa	tccaacaagg	caatcggcaa	aatccgcgcc	1500
tacatccgcc	agcaaaaacgc	cgacaccgtg	cgcgagaag	gccgcgtcca	actcgacaaa	1560
cagcttgcca	aactcacgcc	caaaaccaac	ctgcaagagc	ttgccgaaaa	tctcggttac	1620
aaaaagccag	aagacctcta	caccgcgcgc	ggacaaggcg	aaatttccaa	ccgcgccatc	1680
caaaaagcct	gcggcacgct	gaacgaaccg	ccgccgtac	ccgtcagcga	aaccaccatc	1740
gtcaaacagt	gcaaaatcaa	aaaaggcggc	aaaaacggcg	tgctcatcga	cggcgaagac	1800
ggtctgatga	ccacgcttgc	caaatgctgc	aaaccgcgcg	cgcccgacga	tattatcggc	1860
ttcgttaccc	gcgagcgccg	catttcagtg	caccgcaaaa	cctgcccgtc	tttccaacac	1920
ctcgccgaac	acgcgcccga	aaaagtgtcg	gacgcaagct	ggcgcgcatc	gcaggaagga	1980
caagtattcg	ccgtcgatat	cgaaatccgc	gcccgaagcc	gctccgggct	tttgcgcgac	2040
gtatccgacg	cgctcgcccc	ccacaaactc	aacgttaccg	ccgtgcaaac	ccagtcgccg	2100
gacttggaag	ccagcatgag	gttcacgctc	gaagtcaaac	aagtcaacga	cctcccgccg	2160

gtcctcgcca gcctcggcga cgtcaaaggc gtattgagcg ttaccgggct ttaa

2214

<210> 420

<211> 737

<212> PRT

<213> *Neisseria meningitidis*

<400> 420

Met Thr Ala Ile Ser Pro Ile Gln Asp Thr Gln Ser Ala Thr Leu Gln
1 5 10 15

Glu Leu Arg Glu Trp Phe Asp Ser Tyr Cys Ala Ala Leu Pro Asp Asn
20 25 30

Asp Lys Asn Leu Ile Gly Thr Ala Trp Leu Leu Ala Gln Glu His Tyr
35 40 45

Pro Ala Asp Ala Ala Thr Pro Tyr Gly Glu Pro Leu Pro Asp His Phe
50 55 60

Leu Gly Ala Ala Gln Met Val His Glu Leu Asp Leu Leu Pro Asp Ala
65 70 75 80

Val Ala Ala Thr Leu Leu Ala Asp Ile Gly Arg Tyr Val Pro Asp Trp
85 90 95

Asn Leu Leu Val Ser Glu Arg Cys Asn Ser Thr Val Ala Glu Leu Val
100 105 110

Lys Gly Val Asp Glu Val Gln Lys Leu Thr His Phe Ala Arg Val Asp
115 120 125

Ser Leu Ala Thr Pro Glu Glu Arg Ala Gln Gln Ala Glu Thr Met Arg
130 135 140

Lys Met Leu Leu Ala Met Val Thr Asp Ile Arg Val Val Leu Ile Lys
145 150 155 160

Leu Ala Met Arg Thr Arg Thr Leu Gln Phe Leu Ser Asn Ala Pro Asp
165 170 175

Ser Pro Glu Lys Arg Ala Val Ala Lys Glu Thr Leu Asp Ile Phe Ala
180 185 190

Pro Leu Ala Asn Arg Leu Gly Val Trp Gln Leu Lys Trp Gln Leu Glu
195 200 205

Asp Leu Gly Phe Arg His Gln Lys Pro Glu Lys Tyr Arg Glu Ile Ala
210 215 220

Leu Leu Leu Asp Glu Lys Arg Thr Glu Arg Leu Glu Tyr Ile Glu Asn
225 230 235 240

Phe Leu Asn Ile Leu Arg Gly Glu Leu Lys Lys Tyr Asn Val His Phe
245 250 255

Glu Val Ala Gly Arg Pro Lys His Ile Tyr Ser Ile Tyr Lys Lys Met
 260 265 270
 Val Lys Lys Lys Leu Ser Phe Asp Gly Leu Phe Asp Ile Arg Ala Val
 275 280 285
 Arg Ile Leu Val Asp Thr Val Pro Glu Cys Tyr Thr Thr Leu Gly Ile
 290 295 300
 Val His Ser Leu Trp Gln Pro Ile Pro Gly Glu Phe Asp Asp Tyr Ile
 305 310 315 320
 Ala Asn Pro Lys Gly Asn Gly Tyr Lys Ser Leu His Thr Val Ile Val
 325 330 335
 Gly Pro Glu Asp Lys Gly Val Glu Val Gln Ile Arg Thr Phe Asp Met
 340 345 350
 His Gln Phe Asn Glu Phe Gly Val Ala Ala His Trp Arg Tyr Lys Glu
 355 360 365
 Gly Gly Lys Gly Asp Ser Ala Tyr Glu Gln Lys Ile Ala Trp Leu Arg
 370 375 380
 Gln Leu Leu Asp Trp Arg Glu Asn Met Ala Glu Ser Gly Lys Glu Asp
 385 390 395 400
 Leu Ala Ala Ala Phe Lys Thr Glu Leu Phe Asn Asp Thr Ile Tyr Val
 405 410 415
 Leu Thr Pro His Gly Lys Val Leu Ser Leu Pro Thr Gly Ala Thr Pro
 420 425 430
 Ile Asp Phe Ala Tyr Ala Leu His Ser Ser Ile Gly Asp Arg Cys Arg
 435 440 445
 Gly Ala Lys Val Glu Gly Gln Ile Val Pro Leu Ser Thr Pro Leu Glu
 450 455 460
 Asn Gly Gln Arg Val Glu Ile Ile Thr Ala Lys Glu Gly His Pro Ser
 465 470 475 480
 Val Asn Trp Leu Tyr Glu Gly Trp Val Lys Ser Asn Lys Ala Ile Gly
 485 490 495
 Lys Ile Arg Ala Tyr Ile Arg Gln Gln Asn Ala Asp Thr Val Arg Glu
 500 505 510
 Glu Gly Arg Val Gln Leu Asp Lys Gln Leu Ala Lys Leu Thr Pro Lys
 515 520 525
 Pro Asn Leu Gln Glu Leu Ala Glu Asn Leu Gly Tyr Lys Lys Pro Glu
 530 535 540
 Asp Leu Tyr Thr Ala Val Gly Gln Gly Glu Ile Ser Asn Arg Ala Ile
 545 550 555 560

Gln Lys Ala Cys Gly Thr Leu Asn Glu Pro Pro Pro Val Pro Val Ser
 565 570 575
 Glu Thr Thr Ile Val Lys Gln Ser Lys Ile Lys Lys Gly Gly Lys Asn
 580 585 590
 Gly Val Leu Ile Asp Gly Glu Asp Gly Leu Met Thr Thr Leu Ala Lys
 595 600 605
 Cys Cys Lys Pro Ala Pro Pro Asp Asp Ile Ile Gly Phe Val Thr Arg
 610 615 620
 Glu Arg Gly Ile Ser Val His Arg Lys Thr Cys Pro Ser Phe Gln His
 625 630 635 640
 Leu Ala Glu His Ala Pro Glu Lys Val Leu Asp Ala Ser Trp Ala Ala
 645 650 655
 Leu Gln Glu Gly Gln Val Phe Ala Val Asp Ile Glu Ile Arg Ala Gln
 660 665 670
 Asp Arg Ser Gly Leu Leu Arg Asp Val Ser Asp Ala Leu Ala Arg His
 675 680 685
 Lys Leu Asn Val Thr Ala Val Gln Thr Gln Ser Arg Asp Leu Glu Ala
 690 695 700
 Ser Met Arg Phe Thr Leu Glu Val Lys Gln Val Asn Asp Leu Pro Arg
 705 710 715 720
 Val Leu Ala Ser Leu Gly Asp Val Lys Gly Val Leu Ser Val Thr Arg
 725 730 735

Leu

<210> 421
 <211> 2214
 <212> DNA
 <213> Neisseria meningitidis

<400> 421
 atgaccgcca tcagcccgat tcaagacacg caaagcgcgga ctctgcaaga attgcgcgaa 60
 tggttcgaca gctactgcac cgcgctgccg aacaacgata aaaaacttgt ctagccgcc 120
 cgttcgctgg cggaagcaca ttaccccgcc gatgccgcca cgccgtatgg cgaaccgctg 180
 cccgaccact tcctcggcgc ggcgcaaattg gttcatgaac tcgacctgct ccccgatgcc 240
 gtcgcccga cctgcttgc cgacatcgga cgctacgtcc ccgactggaa cctattggtt 300
 tccgaacgct gcaacagtac cgtcgccgag ctggtcaaag gtgtggacga agtgcagaaa 360
 ctcaccact tcgcccgggt ggacagcctc gccacgccgg aagaacgcgc ccagcaggca 420
 gaaactatgc ggaaaatgct gctggcgatg gttaccgaca tccgcgtcgt gttaataaaa 480
 ctggcgatgc gtacgcgcac cctgcaattt ttaagcaacg ccccgacag ccccgaaaaa 540
 cgcgccgtcg ccaaagaaac cctcgacatc ttgcgccgc tcgccaaccg tttgggcgtg 600
 tggcagctca aatggcagct cgaagatttg ggcttcgcc atcaagaacc cgaaaaatac 660
 cgcgaaatcg cctgctttt ggacgaaaaa cgcaccgaac gcctcgaata catcgaaaac 720
 ttccttaata tcctgcgtac ggaactcaaa aaatacaata tccactttga agtcgccggc 780
 cgtccgaaac acatctactc catttacaaa aaaatggtga agaaaaaact cagcttcgac 840

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gggttggttcg acatccgcgc cgtgcgggatt ctggttgata ccgtccccga gtgttacacc 900
acactgggca ttgtccacag cctctggcag cccattcccg gcgagttcga cgactacatc 960
gccaaaccga aaggcaacgg ctataaaagt ttgcacaccg tcatcgtcgg ccggaagac 1020
aaaggcgtgg aagtgc aaat ccgcaccttc gatatgcacc aattcaacga attcgggtgtc 1080
gccgcgcact ggcgttacaa agagggcggc aaaggcgatt ccgcctacga acaaaaaatc 1140
gcctggttac gccaaactttt ggactggcgc gaaaacatgg cggaaagcgg caaggaagac 1200
ctcgccgccc ccttcaaaac cgagcttttc aacgacacga tttatgtttt gaccccgcac 1260
ggcaaagtcc tctccctgcc cacaggcgcg acccccatcg acttcgccta cgccctgcac 1320
agcagcatcg gcgaccgttg ccgcgggtgcg aaagtgcgaag ggcagattgt gccgctgtcc 1380
accccgctcg aaaacggaca gcgtgtcgaa atcattaccg ccaaagaagg gcatccttcc 1440
gtcaactggc tttacgaagg ctgggtcaaa tccaacaagg caatcggcaa aatccgcgcc 1500
tacatccgcc agcaaaacgc cgacaccgtg cggaagaag gccgcgtcca actcgacaaa 1560
cagcttgcca aactcacgcc caaacccaac ctgcaagagc ttgccgaaaa tctcggctac 1620
aaaaagccag aagacctcta caccgccgtc ggacaaggcg aaatttccaa ccgcgccatc 1680
caaaaagcct gcggcacgct gaacgaaccg ccgccgtac ccgtcagcga aaccaccatc 1740
gtcaaacagt ccaaaatcaa aaaaggcggc aaaaacggcg tgctcatcga cggcgaagac 1800
ggtctgatga ccacgcttgc caaatgctgc aaaccgcgcg cgcccgacga cattgtcggc 1860
ttcgttacc gcgacgcggc catttcggta caccgcaaaa cctgcccctc tttccgacac 1920
ctcgccgaac acgcgccga aaaagtactg gacgcaagtt gggcggcggt gcaggaagga 1980
caagtgttcg ccgtcgatat cgaaatccgc gcccaagacc gtcgggggt tttgcgcgac 2040
gtatccgacg cgctcgcccgc ccacaaactc aacgttaccg ccgtgcaaac ccagtcgcgc 2100
gacttgaag ccagcatgag gttcacgctc gaagtcaaac aagttaccga cctccacgc 2160
gtcctcgcca gcctcggcga cgtcaaaggc gtattgagcg ttaccgggt ttaa 2214

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<210> 422

<211> 737

<212> PRT

<213> Neisseria meningitidis

<400> 422

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Met Thr Ala Ile Ser Pro Ile Gln Asp Thr Gln Ser Ala Thr Leu Gln
  1                      5                      10                      15

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Glu Leu Arg Glu Trp Phe Asp Ser Tyr Cys Thr Ala Leu Pro Asn Asn
      20                      25                      30

```

```

Asp Lys Lys Leu Val Leu Ala Ala Arg Ser Leu Ala Glu Ala His Tyr
      35                      40                      45

```

```

Pro Ala Asp Ala Ala Thr Pro Tyr Gly Glu Pro Leu Pro Asp His Phe
      50                      55                      60

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```

Leu Gly Ala Ala Gln Met Val His Glu Leu Asp Leu Leu Pro Asp Ala
      65                      70                      75                      80

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```

Val Ala Ala Thr Leu Leu Ala Asp Ile Gly Arg Tyr Val Pro Asp Trp
      85                      90                      95

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Asn Leu Leu Val Ser Glu Arg Cys Asn Ser Thr Val Ala Glu Leu Val
      100                     105                     110

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Lys Gly Val Asp Glu Val Gln Lys Leu Thr His Phe Ala Arg Val Asp
      115                     120                     125

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```

Ser Leu Ala Thr Pro Glu Glu Arg Ala Gln Gln Ala Glu Thr Met Arg
      130                     135                     140

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Lys Met Leu Leu Ala Met Val Thr Asp Ile Arg Val Val Leu Ile Lys
 145 150 155 160
 Leu Ala Met Arg Thr Arg Thr Leu Gln Phe Leu Ser Asn Ala Pro Asp
 165 170 175
 Ser Pro Glu Lys Arg Ala Val Ala Lys Glu Thr Leu Asp Ile Phe Ala
 180 185 190
 Pro Leu Ala Asn Arg Leu Gly Val Trp Gln Leu Lys Trp Gln Leu Glu
 195 200 205
 Asp Leu Gly Phe Arg His Gln Glu Pro Glu Lys Tyr Arg Glu Ile Ala
 210 215 220
 Leu Leu Leu Asp Glu Lys Arg Thr Glu Arg Leu Glu Tyr Ile Glu Asn
 225 230 235 240
 Phe Leu Asn Ile Leu Arg Thr Glu Leu Lys Lys Tyr Asn Ile His Phe
 245 250 255
 Glu Val Ala Gly Arg Pro Lys His Ile Tyr Ser Ile Tyr Lys Lys Met
 260 265 270
 Val Lys Lys Lys Leu Ser Phe Asp Gly Leu Phe Asp Ile Arg Ala Val
 275 280 285
 Arg Ile Leu Val Asp Thr Val Pro Glu Cys Tyr Thr Thr Leu Gly Ile
 290 295 300
 Val His Ser Leu Trp Gln Pro Ile Pro Gly Glu Phe Asp Asp Tyr Ile
 305 310 315 320
 Ala Asn Pro Lys Gly Asn Gly Tyr Lys Ser Leu His Thr Val Ile Val
 325 330 335
 Gly Pro Glu Asp Lys Gly Val Glu Val Gln Ile Arg Thr Phe Asp Met
 340 345 350
 His Gln Phe Asn Glu Phe Gly Val Ala Ala His Trp Arg Tyr Lys Glu
 355 360 365
 Gly Gly Lys Gly Asp Ser Ala Tyr Glu Gln Lys Ile Ala Trp Leu Arg
 370 375 380
 Gln Leu Leu Asp Trp Arg Glu Asn Met Ala Glu Ser Gly Lys Glu Asp
 385 390 395 400
 Leu Ala Ala Ala Phe Lys Thr Glu Leu Phe Asn Asp Thr Ile Tyr Val
 405 410 415
 Leu Thr Pro His Gly Lys Val Leu Ser Leu Pro Thr Gly Ala Thr Pro
 420 425 430
 Ile Asp Phe Ala Tyr Ala Leu His Ser Ser Ile Gly Asp Arg Cys Arg
 435 440 445

Gly Ala Lys Val Glu Gly Gln Ile Val Pro Leu Ser Thr Pro Leu Glu
 450 455 460
 Asn Gly Gln Arg Val Glu Ile Ile Thr Ala Lys Glu Gly His Pro Ser
 465 470 475 480
 Val Asn Trp Leu Tyr Glu Gly Trp Val Lys Ser Asn Lys Ala Ile Gly
 485 490 495
 Lys Ile Arg Ala Tyr Ile Arg Gln Gln Asn Ala Asp Thr Val Arg Glu
 500 505 510
 Glu Gly Arg Val Gln Leu Asp Lys Gln Leu Ala Lys Leu Thr Pro Lys
 515 520 525
 Pro Asn Leu Gln Glu Leu Ala Glu Asn Leu Gly Tyr Lys Lys Pro Glu
 530 535 540
 Asp Leu Tyr Thr Ala Val Gly Gln Gly Glu Ile Ser Asn Arg Ala Ile
 545 550 555 560
 Gln Lys Ala Cys Gly Thr Leu Asn Glu Pro Pro Pro Val Pro Val Ser
 565 570 575
 Glu Thr Thr Ile Val Lys Gln Ser Lys Ile Lys Lys Gly Gly Lys Asn
 580 585 590
 Gly Val Leu Ile Asp Gly Glu Asp Gly Leu Met Thr Thr Leu Ala Lys
 595 600 605
 Cys Cys Lys Pro Ala Pro Pro Asp Asp Ile Val Gly Phe Val Thr Arg
 610 615 620
 Asp Arg Gly Ile Ser Val His Arg Lys Thr Cys Pro Ser Phe Arg His
 625 630 635 640
 Leu Ala Glu His Ala Pro Glu Lys Val Leu Asp Ala Ser Trp Ala Ala
 645 650 655
 Leu Gln Glu Gly Gln Val Phe Ala Val Asp Ile Glu Ile Arg Ala Gln
 660 665 670
 Asp Arg Ser Gly Leu Leu Arg Asp Val Ser Asp Ala Leu Ala Arg His
 675 680 685
 Lys Leu Asn Val Thr Ala Val Gln Thr Gln Ser Arg Asp Leu Glu Ala
 690 695 700
 Ser Met Arg Phe Thr Leu Glu Val Lys Gln Val Thr Asp Leu Pro Arg
 705 710 715 720
 Val Leu Ala Ser Leu Gly Asp Val Lys Gly Val Leu Ser Val Thr Arg
 725 730 735
 Leu

<210> 423
<211> 378
<212> DNA
<213> *Neisseria gonorrhoeae*

<400> 423
atgtgctgagt tcaaggattt tagaagaaac atcccttggt ttgaagagta tgacgaaaat 60
tcattttattg gcaaattggt tgaatgacggg gtgtgggatg atgaagaata ttggaagctg 120
gagaatgatt taatcgaggt taggagaaaa tacccttacc cgatggatat accaagggat 180
attgtgattg gaatcggtac cattattgat tttttaatgg ttccaaattg ggagcttttt 240
gaaattaaag cttccccttg gttgcctgat agcgtgggaa ttcataaacg ttatgaaaga 300
ttcacaacga tgctccgtta tatttttacc gagaaagaca tagtcaacgt gcgatttgat 360
tattacaaca aaaaatag 378

<210> 424
<211> 125
<212> PRT
<213> *Neisseria gonorrhoeae*

<400> 424
Met Cys Glu Phe Lys Asp Phe Arg Arg Asn Ile Pro Cys Phe Glu Glu
1 5 10 15
Tyr Asp Glu Asn Ser Phe Ile Gly Lys Trp Tyr Asp Asp Gly Val Trp
20 25 30
Asp Asp Glu Glu Tyr Trp Lys Leu Glu Asn Asp Leu Ile Glu Val Arg
35 40 45
Arg Lys Tyr Pro Tyr Pro Met Asp Ile Pro Arg Asp Ile Val Ile Gly
50 55 60
Ile Gly Thr Ile Ile Asp Phe Leu Met Val Pro Asn Trp Glu Leu Phe
65 70 75 80
Glu Ile Lys Ala Ser Pro Trp Leu Pro Asp Ser Val Gly Ile His Glu
85 90 95
Arg Tyr Glu Arg Phe Thr Thr Met Leu Arg Tyr Ile Phe Thr Glu Lys
100 105 110
Asp Ile Val Asn Val Arg Phe Asp Tyr Tyr Asn Lys Lys
115 120 125

<210> 425
<211> 378
<212> DNA
<213> *Neisseria meningitidis*

<400> 425
atgtgtgagt tcaaggatat tataagaaac gttccttatt ttgaggggta tgacgaaaat 60
tcattttattg gcaaattggt tgaatgacggg gtgtgggatg atgaagaata ttggaagtgt 120
gagaatgatt taatcgaggt tagaaaaaaa tacccttacc cgatggacat accaagatat 180

```

gttgatcattg gaatcgggtac cattattgat ttcttaatgg ttccaaattg gaaacttttt 240
gaaattaaag cttccccttg gttgcctgat agtgtgggaa ttcataaacg ttatgaaaga 300
ttcacaacga tgctccgtta tatttttacc gagaaagaca tagtcaacgt gcgatttgat 360
tattacaaca aaaaatag 378

```

<210> 426
 <211> 125
 <212> PRT
 <213> *Neisseria meningitidis*

```

<400> 426
Met Cys Glu Phe Lys Asp Ile Ile Arg Asn Val Pro Tyr Phe Glu Gly
  1             5             10             15
Tyr Asp Glu Asn Ser Phe Ile Gly Lys Trp Tyr Asp Asp Gly Val Trp
             20             25             30
Asp Asp Glu Glu Tyr Trp Lys Leu Glu Asn Asp Leu Ile Glu Val Arg
             35             40             45
Lys Lys Tyr Pro Tyr Pro Met Asp Ile Pro Arg Tyr Val Val Ile Gly
             50             55             60
Ile Gly Thr Ile Ile Asp Phe Leu Met Val Pro Asn Trp Lys Leu Phe
             65             70             75             80
Glu Ile Lys Ala Ser Pro Trp Leu Pro Asp Ser Val Gly Ile His Glu
             85             90             95
Arg Tyr Glu Arg Phe Thr Thr Met Leu Arg Tyr Ile Phe Thr Glu Lys
             100            105            110
Asp Ile Val Asn Val Arg Phe Asp Tyr Tyr Asn Lys Lys
             115            120            125

```

<210> 427
 <211> 378
 <212> DNA
 <213> *Neisseria meningitidis*

```

<400> 427
atgtgtgagt tcaaggattt tagaagaaac atcccttggt ttgaagagta tgacgaaaat 60
tcatttattg gcaaatggta tgatgacggg gtgtgggatg atgaagaata ttggaaattg 120
gagaatgatt taatcgaggt tagaaaaaaa tacccttacc cgatggatat accaagggat 180
attgtgattg gaatcgggtac cattattgat tttttaatgg ttccaaattg ggagcttttt 240
gaaattaaag cttccccttg gttgcctgat agtgtgggaa ttcataaacg ttatgaaaga 300
ttcacaacga tgctccgtta tatttttacc gagaaagaca tagtcaacgt gcgatttgat 360
tattacaaca aaaaatag 378

```

<210> 428
 <211> 125
 <212> PRT

<213> Neisseria meningitidis

<400> 428

Met Cys Glu Phe Lys Asp Phe Arg Arg Asn Ile Pro Cys Phe Glu Glu
1 5 10 15
Tyr Asp Glu Asn Ser Phe Ile Gly Lys Trp Tyr Asp Asp Gly Val Trp
20 25 30
Asp Asp Glu Glu Tyr Trp Lys Leu Glu Asn Asp Leu Ile Glu Val Arg
35 40 45
Lys Lys Tyr Pro Tyr Pro Met Asp Ile Pro Arg Asp Ile Val Ile Gly
50 55 60
Ile Gly Thr Ile Ile Asp Phe Leu Met Val Pro Asn Trp Glu Leu Phe
65 70 75 80
Glu Ile Lys Ala Ser Pro Trp Leu Pro Asp Ser Val Gly Ile His Glu
85 90 95
Arg Tyr Glu Arg Phe Thr Thr Met Leu Arg Tyr Ile Phe Thr Glu Lys
100 105 110
Asp Ile Val Asn Val Arg Phe Asp Tyr Tyr Asn Lys Lys
115 120 125

<210> 429

<211> 672

<212> DNA

<213> Neisseria gonorrhoeae

<400> 429

atgatgaaga cttttaaaaa tatattttcc gccgccattt tgtccgccgc cctgccgtgc 60
gcgtatgcgg caaggctacc ccaatccgcc gtgctgcact attccggcag ctacggcatt 120
cccgccacga tgacatttga acgcagcggc aatgcttaca aaatcgtttc gacgattaaa 180
gtgccgctat acaatatccg tttcgaatcc ggcgggtacgg ttgtcggcaa taccctgcac 240
cctgcctact ataaagacat acgcagggggc aaactgtatg cggaagccaa attcgcgcac 300
ggcagcgtaa cctacggcaa agcggggcgag agcaaaaccg agcaaagccc caaggctatg 360
gatttggttca cgcttgccctg gcagttggcg gcaaatgaag cgaaactccc cccgggtctg 420
aaaatcacca acggcaaaaa actttattcc gtcggcgggc tgaataaggc gggtaacggga 480
aaatacagca taggcggcgt ggaaaccgaa gtcgtcaa atcggggtgcg gcgcggcgac 540
gatacggtaa cgtatttctt cgcaccgtcc ctgaacaata ttccggcaca aatcggctat 600
accgacgacg gcaaaacctt tacgctgaag ctcaaatcgg tgcagatcaa cggacaggcc 660
gccaaaccgt aa 672

<210> 430

<211> 223

<212> PRT

<213> Neisseria gonorrhoeae

<400> 430

Met Met Lys Thr Phe Lys Asn Ile Phe Ser Ala Ala Ile Leu Ser Ala
1 5 10 15

Ala Leu Pro Cys Ala Tyr Ala Ala Arg Leu Pro Gln Ser Ala Val Leu
 20 25 30
 His Tyr Ser Gly Ser Tyr Gly Ile Pro Ala Thr Met Thr Phe Glu Arg
 35 40 45
 Ser Gly Asn Ala Tyr Lys Ile Val Ser Thr Ile Lys Val Pro Leu Tyr
 50 55 60
 Asn Ile Arg Phe Glu Ser Gly Gly Thr Val Val Gly Asn Thr Leu His
 65 70 75 80
 Pro Ala Tyr Tyr Lys Asp Ile Arg Arg Gly Lys Leu Tyr Ala Glu Ala
 85 90 95
 Lys Phe Ala Asp Gly Ser Val Thr Tyr Gly Lys Ala Gly Glu Ser Lys
 100 105 110
 Thr Glu Gln Ser Pro Lys Ala Met Asp Leu Phe Thr Leu Ala Trp Gln
 115 120 125
 Leu Ala Ala Asn Asp Ala Lys Leu Pro Pro Gly Leu Lys Ile Thr Asn
 130 135 140
 Gly Lys Lys Leu Tyr Ser Val Gly Gly Leu Asn Lys Ala Gly Thr Gly
 145 150 155 160
 Lys Tyr Ser Ile Gly Gly Val Glu Thr Glu Val Val Lys Tyr Arg Val
 165 170 175
 Arg Arg Gly Asp Asp Thr Val Thr Tyr Phe Phe Ala Pro Ser Leu Asn
 180 185 190
 Asn Ile Pro Ala Gln Ile Gly Tyr Thr Asp Asp Gly Lys Thr Tyr Thr
 195 200 205
 Leu Lys Leu Lys Ser Val Gln Ile Asn Gly Gln Ala Ala Lys Pro
 210 215 220

<210> 431

<211> 669

<212> DNA

<213> *Neisseria meningitidis*

<400> 431

atgatgaaga cttttaaaaa tatattttcc gccgccattt tgtcgcgcgc cctgccgtgc 60
 gcgtatgcgg cagggctgcc ccaatccgcc gtgctgmact attccggcag ctacggcatt 120
 cccgccacga tgacatttga acgcagcggc aatgcttaca aaatcgtttc gacgattaaa 180
 gtgccgctat acaatatccg tttcgagtcg ggcgggtacg ttgtcggcaa taccctgcac 240
 cctacctact atagagacat acgcaggggc aaactgtatg cggaagccaa attcggcgac 300
 ggcagcgtaa cttacggcaa agcgggcgag agcaaaaccg agcaaagccc caaggctatg 360
 gatttgttca cgcttgccctg gcagttggcg gcaaagtacg cgaaactccc cccggggctg 420
 aaaatcacca acggcaaaaa actttattcc gtcggcggtt tgaataaggc ggggtacagga 480
 aaatacagca taggcggcgt ggaaaccgaa gtcgtcaa atcgggtgcg gcgcggcgac 540
 gatgcggtaa tgtattttctt cgcaccgtcc ctgaacaata ttccggcaca aatcggctat 600
 accgacgacg gcaaaacctt tacgctgaaa ctcaaatacg tgcagatcaa cggccaggca 660

<210> 432
<211> 223
<212> PRT
<213> *Neisseria meningitidis*

<400> 432
Met Met Lys Thr Phe Lys Asn Ile Phe Ser Ala Ala Ile Leu Ser Ala
1 5 10 15
Ala Leu Pro Cys Ala Tyr Ala Ala Gly Leu Pro Gln Ser Ala Val Leu
20 25 30
Xaa Tyr Ser Gly Ser Tyr Gly Ile Pro Ala Thr Met Thr Phe Glu Arg
35 40 45
Ser Gly Asn Ala Tyr Lys Ile Val Ser Thr Ile Lys Val Pro Leu Tyr
50 55 60
Asn Ile Arg Phe Glu Ser Gly Gly Thr Val Val Gly Asn Thr Leu His
65 70 75 80
Pro Thr Tyr Tyr Arg Asp Ile Arg Arg Gly Lys Leu Tyr Ala Glu Ala
85 90 95
Lys Phe Ala Asp Gly Ser Val Thr Tyr Gly Lys Ala Gly Glu Ser Lys
100 105 110
Thr Glu Gln Ser Pro Lys Ala Met Asp Leu Phe Thr Leu Ala Trp Gln
115 120 125
Leu Ala Ala Asn Asp Ala Lys Leu Pro Pro Gly Leu Lys Ile Thr Asn
130 135 140
Gly Lys Lys Leu Tyr Ser Val Gly Gly Leu Asn Lys Ala Gly Thr Gly
145 150 155 160
Lys Tyr Ser Ile Gly Gly Val Glu Thr Glu Val Val Lys Tyr Arg Val
165 170 175
Arg Arg Gly Asp Asp Ala Val Met Tyr Phe Phe Ala Pro Ser Leu Asn
180 185 190
Asn Ile Pro Ala Gln Ile Gly Tyr Thr Asp Asp Gly Lys Thr Tyr Thr
195 200 205
Leu Lys Leu Lys Ser Val Gln Ile Asn Gly Gln Ala Ala Lys Pro
210 215 220

<210> 433
<211> 672
<212> DNA
<213> *Neisseria meningitidis*

<400> 433

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atgatgaaga cttttaaaaa tatattttcc gccgccattt tgtccgccgc cctgccgtgc 60
gcgtatgcgg cagggctgcc ccaatccgcc gtgctgcact attccggcag ctacggcatt 120
cccgccacga tgacatttga acgcagcggc aatgcttaca aaatcgtttc gacgattaaa 180
gtgccgctat acaatatccg ttctgagtcc gccggtacgg ttgtcggcaa taccctgcac 240
cctacctact atagagacat acgcaggggc aaactgtatg cggaagccaa attcggcgac 300
ggcagcgtaa cctacggcaa agcgggcgag agcaaaaccg agcaaagccc caaggctatg 360
gatttgttca cgcttgccctg gcagttggcg gcaaatgacg cgaaactccc cccggggctg 420
aaaatcacca acggcaaaaa actttattcc gtcggcggtt tgaataaggc gggtagagga 480
aaatacagca taggcggcgt ggaaaccgaa gtcgtcaa atcggggtgc gcgcggcgac 540
gatgcggtaa tgtatttctt cgcaccgtcc ctgaacaata ttccggcaca aatcggctat 600
accgacgacg gcaaaaccta tacgctgaaa ctcaaatcgg tgcagatcaa cggccaggca 660
gccaaaccgt aa 672
```

<210> 434

<211> 223

<212> PRT

<213> *Neisseria meningitidis*

<400> 434

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Met Met Lys Thr Phe Lys Asn Ile Phe Ser Ala Ala Ile Leu Ser Ala
  1             5             10             15

Ala Leu Pro Cys Ala Tyr Ala Ala Gly Leu Pro Gln Ser Ala Val Leu
      20             25             30

His Tyr Ser Gly Ser Tyr Gly Ile Pro Ala Thr Met Thr Phe Glu Arg
      35             40             45

Ser Gly Asn Ala Tyr Lys Ile Val Ser Thr Ile Lys Val Pro Leu Tyr
      50             55             60

Asn Ile Arg Phe Glu Ser Gly Gly Thr Val Val Gly Asn Thr Leu His
      65             70             75             80

Pro Thr Tyr Tyr Arg Asp Ile Arg Arg Gly Lys Leu Tyr Ala Glu Ala
      85             90             95

Lys Phe Ala Asp Gly Ser Val Thr Tyr Gly Lys Ala Gly Glu Ser Lys
      100            105            110

Thr Glu Gln Ser Pro Lys Ala Met Asp Leu Phe Thr Leu Ala Trp Gln
      115            120            125

Leu Ala Ala Asn Asp Ala Lys Leu Pro Pro Gly Leu Lys Ile Thr Asn
      130            135            140

Gly Lys Lys Leu Tyr Ser Val Gly Gly Leu Asn Lys Ala Gly Thr Gly
      145            150            155            160

Lys Tyr Ser Ile Gly Gly Val Glu Thr Glu Val Val Lys Tyr Arg Val
      165            170            175

Arg Arg Gly Asp Asp Ala Val Met Tyr Phe Phe Ala Pro Ser Leu Asn
      180            185            190
```

Asn Ile Pro Ala Gln Ile Gly Tyr Thr Asp Asp Gly Lys Thr Tyr Thr
 195 200 205

Leu Lys Leu Lys Ser Val Gln Ile Asn Gly Gln Ala Ala Lys Pro
 210 215 220

<210> 435
 <211> 1101
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 435
 atggaaacac agctttacat cggcattatg tcgggaacca gtatggacgg ggcggatgcc 60
 gtgctggtac ggatggacgg cggcaaattg ctgggcgcgg aagggcacgc ctttaccctcc 120
 taccctgacc ggttgccgac caaattgctg gatttgcagg acacaggcac agacgaactg 180
 caccgcagca ggatgttgct gcaagaactc agccgcctgt acgcgcaaac cgccgccgaa 240
 ctgctgtgca gtcaaaacct cgctccgtgc gacattaccg ccctcggctg ccacgggcaa 300
 accgtccgac acgcgccgga acacggttac agcatacagc ttgccgattt gccgctgctg 360
 gcggaactga cgcggttttt taccgtcggc gacttccgca gccgcgacct tgctgccggc 420
 ggacaagggt cgccgctcgt ccccgccctt cacgaagccc tgttccgcga tgacagggaa 480
 acacgcgtgg tactgaacat cggcgggatt gccaacatca gcgtactccc ccccgccgca 540
 cccgccttcg gcttcgacac agggccgggc aatatgctga tggacgcgtg gacgcaggca 600
 cactggcagc tgccttacga caaaaacggt gcaaaggcgg cacaaggcaa catattgccg 660
 caactgctcg gcaggctgct cgcccacccg tatttctcac aacccacccc aaaaagcacg 720
 gggcgcggaac tgtttgccct aaattggctc gaaacctacc ttgacggcgg cgaaaaccga 780
 tacgacgtat tgcggacgct ttcccattc accgcgcaaa ccggttgagg cgccgtctca 840
 cagcagcggc cagatgcccg tcaaatgtac atttgccggc gcggcatccg caatcctgtt 900
 ttaatggcgg atttggcaga atgtttcggc acacgcgttt ccctgcacag caccgccgaa 960
 ctgaacctcg atcctcaatg ggtggaggcg gccgcatttg cgtggttggc ggcgtgttgg 1020
 attaacgca ttcccggtag tccgcacaaa gcgaccggcg catccaaacc gtgtattctg 1080
 ggcgcgggat attattattg a 1101

<210> 436
 <211> 366
 <212> PRT
 <213> Neisseria gonorrhoeae

<400> 436
 Met Glu Thr Gln Leu Tyr Ile Gly Ile Met Ser Gly Thr Ser Met Asp
 1 5 10 15
 Gly Ala Asp Ala Val Leu Val Arg Met Asp Gly Gly Lys Trp Leu Gly
 20 25 30
 Ala Glu Gly His Ala Phe Thr Pro Tyr Pro Asp Arg Leu Arg Arg Lys
 35 40 45
 Leu Leu Asp Leu Gln Asp Thr Gly Thr Asp Glu Leu His Arg Ser Arg
 50 55 60
 Met Leu Ser Gln Glu Leu Ser Arg Leu Tyr Ala Gln Thr Ala Ala Glu
 65 70 75 80
 Leu Leu Cys Ser Gln Asn Leu Ala Pro Cys Asp Ile Thr Ala Leu Gly

85										90					95				
Cys	His	Gly	Gln	Thr	Val	Arg	His	Ala	Pro	Glu	His	Gly	Tyr	Ser	Ile				
			100					105					110						
Gln	Leu	Ala	Asp	Leu	Pro	Leu	Leu	Ala	Glu	Leu	Thr	Arg	Ile	Phe	Thr				
		115					120					125							
Val	Gly	Asp	Phe	Arg	Ser	Arg	Asp	Leu	Ala	Ala	Gly	Gly	Gln	Gly	Ala				
	130					135					140								
Pro	Leu	Val	Pro	Ala	Phe	His	Glu	Ala	Leu	Phe	Arg	Asp	Asp	Arg	Glu				
145					150					155					160				
Thr	Arg	Val	Val	Leu	Asn	Ile	Gly	Gly	Ile	Ala	Asn	Ile	Ser	Val	Leu				
				165					170					175					
Pro	Pro	Gly	Ala	Pro	Ala	Phe	Gly	Phe	Asp	Thr	Gly	Pro	Gly	Asn	Met				
			180					185					190						
Leu	Met	Asp	Ala	Trp	Thr	Gln	Ala	His	Trp	Gln	Leu	Pro	Tyr	Asp	Lys				
	195						200					205							
Asn	Gly	Ala	Lys	Ala	Ala	Gln	Gly	Asn	Ile	Leu	Pro	Gln	Leu	Leu	Gly				
	210					215					220								
Arg	Leu	Leu	Ala	His	Pro	Tyr	Phe	Ser	Gln	Pro	His	Pro	Lys	Ser	Thr				
225					230					235					240				
Gly	Arg	Glu	Leu	Phe	Ala	Leu	Asn	Trp	Leu	Glu	Thr	Tyr	Leu	Asp	Gly				
			245						250					255					
Gly	Glu	Asn	Arg	Tyr	Asp	Val	Leu	Arg	Thr	Leu	Ser	Arg	Phe	Thr	Ala				
			260					265					270						
Gln	Thr	Val	Trp	Asp	Ala	Val	Ser	His	Ala	Ala	Ala	Asp	Ala	Arg	Gln				
		275					280					285							
Met	Tyr	Ile	Cys	Gly	Gly	Gly	Ile	Arg	Asn	Pro	Val	Leu	Met	Ala	Asp				
	290					295				300									
Leu	Ala	Glu	Cys	Phe	Gly	Thr	Arg	Val	Ser	Leu	His	Ser	Thr	Ala	Glu				
305					310					315					320				
Leu	Asn	Leu	Asp	Pro	Gln	Trp	Val	Glu	Ala	Ala	Ala	Phe	Ala	Trp	Leu				
			325						330					335					
Ala	Ala	Cys	Trp	Ile	Asn	Arg	Ile	Pro	Gly	Ser	Pro	His	Lys	Ala	Thr				
		340						345					350						
Gly	Ala	Ser	Lys	Pro	Cys	Ile	Leu	Gly	Ala	Gly	Tyr	Tyr	Tyr						
	355						360					365							

<210> 437

<211> 1101

<212> DNA

<213> Neisseria meningitidis

<400> 437

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atggaacac agctttacat cggcatcatg tcggaacca gcatggacgg ggcggatgcc 60
gtactgatac ggatggacgg cggcaaatgg ctgggcgcgg aagggcacgc ctttaccccc 120
taccgcggca ggttacgccg ccaattgctg gatttgcagg acacaggcgc agacgaactg 180
caccgcagca ggattttgtc gcaagaactc agccgcctat atgcgcaaac cgccgccgaa 240
ctgctgtgca gtcaaaacct cgcaccgtcc gacattaccg ccctcggctg ccacgggcaa 300
accgtccgac acgcgccgga acacggttac agcatacagc ttgccgattt gccgctgctg 360
gcgnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 420
nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 480
nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 540
nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 600
nnnnnnncag ttcccttacga caaaaacggt gcaaagtcgg cacaaggcaa catattgccg 660
caactgctcg acaggctgct cgcccacccg tatttcgcac aacgccaccc taaaagcacg 720
gggcgcgaac tgtttgccat aaattggctc gaaacctacc ttgacggcgg cgaaaaccga 780
tacgacgtat tgcggacgct ttcccgtttt accgcgcaaa ccgtttgcga cgccgtctca 840
cacgcagcgg cagatgcccg tcaaatgtac atttgcgacg gcggcatccg caatcctgtt 900
ttaatggcgg atttggcaga atgtttcggc acacgcgttt ccctgcacag caccgccgac 960
ctgaacctcg atccgcaatg ggtggaagcc gccgnatttg cgtggttggc ggcgtgttgg 1020
attaatcgca ttcccgttag tccgcacaaa gcaaccggcg catccaaacc gtgtattctg 1080
ancgcgggat attattattg a 1101

```

<210> 438

<211> 366

<212> PRT

<213> Neisseria meningitidis

<400> 438

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Met Glu Thr Gln Leu Tyr Ile Gly Ile Met Ser Gly Thr Ser Met Asp
  1              5              10              15

Gly Ala Asp Ala Val Leu Ile Arg Met Asp Gly Gly Lys Trp Leu Gly
      20              25              30

Ala Glu Gly His Ala Phe Thr Pro Tyr Pro Gly Arg Leu Arg Arg Gln
      35              40              45

Leu Leu Asp Leu Gln Asp Thr Gly Ala Asp Glu Leu His Arg Ser Arg
      50              55              60

Ile Leu Ser Gln Glu Leu Ser Arg Leu Tyr Ala Gln Thr Ala Ala Glu
      65              70              75              80

Leu Leu Cys Ser Gln Asn Leu Ala Pro Ser Asp Ile Thr Ala Leu Gly
      85              90              95

Cys His Gly Gln Thr Val Arg His Ala Pro Glu His Gly Tyr Ser Ile
      100             105             110

Gln Leu Ala Asp Leu Pro Leu Leu Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa
      115             120             125

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
      130             135             140

```

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
145 150 155 160
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
165 170 175
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
180 185 190
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gln Leu Pro Tyr Asp Lys
195 200 205
Asn Gly Ala Lys Ser Ala Gln Gly Asn Ile Leu Pro Gln Leu Leu Asp
210 215 220
Arg Leu Leu Ala His Pro Tyr Phe Ala Gln Arg His Pro Lys Ser Thr
225 230 235 240
Gly Arg Glu Leu Phe Ala Ile Asn Trp Leu Glu Thr Tyr Leu Asp Gly
245 250 255
Gly Glu Asn Arg Tyr Asp Val Leu Arg Thr Leu Ser Arg Phe Thr Ala
260 265 270
Gln Thr Val Cys Asp Ala Val Ser His Ala Ala Ala Asp Ala Arg Gln
275 280 285
Met Tyr Ile Cys Asp Gly Gly Ile Arg Asn Pro Val Leu Met Ala Asp
290 295 300
Leu Ala Glu Cys Phe Gly Thr Arg Val Ser Leu His Ser Thr Ala Asp
305 310 315 320
Leu Asn Leu Asp Pro Gln Trp Val Glu Ala Ala Xaa Phe Ala Trp Leu
325 330 335
Ala Ala Cys Trp Ile Asn Arg Ile Pro Gly Ser Pro His Lys Ala Thr
340 345 350
Gly Ala Ser Lys Pro Cys Ile Leu Xaa Ala Gly Tyr Tyr Tyr
355 360 365

<210> 439
<211> 1101
<212> DNA
<213> Neisseria meningitidis

<400> 439
atggaaacac agctttacat cggcatcatg tcgggaacca gcatggacgg ggcggatgcc 60
gtactgatac ggatggacgg cggcaaatgg ctgggcgcgg aagggcacgc ctttaccccc 120
taccocggca ggttacgccg caaattgctg gatttgcagg acacaggcgc ggacgaactg 180
caccgcagca ggatgttgct gcaagaactc agccgcctgt acgcgcaaac cgccgccgaa 240
ctgctgtgca gtcaaaacct cgcgccgtcc gacattaccg ccctcggctg ccacgggcaa 300
accgtcagac acgcgcggga acacagttac agcgtacagc ttgccgattt gccgctgctg 360
gcggaacgga ctcagatttt taccgtcggc gacttccgca gccgcgacct tgcggccggc 420
ggacaaggcg cgccgctcgt cccgccttt cacgaagccc tgttccgcga cgacagggaa 480

```

acacgcgcgg tactgaacat cggcgggatt gccaacatca gcgtactccc ccccgacgca 540
cccgcttcg gcttcgacac aggaccgggc aatatgctga tggacgcgtg gatgcaggca 600
cactggcagc ttccttacga caaaaacggg gcaaaggcgg cacaaggcaa catattgccg 660
caactgctcg acaggctgct cgcccacccg tatttcgcac aacccacccc taaaagcacg 720
gggcgcgaac tgtttgccct aaattggctc gaaacctacc ttgacggcgg cgaaaaccga 780
tacgacgtat tgcggacgct ttcccgattc accgcgcaaa ccgttttcga cgccgtctca 840
cacgcagcgg cagatgcccg tcaaattgtac atttgcggcg gcggcatccg caatcctgtt 900
ttaatggcgg atttggcaga atgtttcggc acacgcgttt ccctgcacag caccgccgaa 960
ctgaacctcg atccgcaatg ggtagaagcc gccgcgttcg catggatggc ggcgtgttgg 1020
gtcaaccgca ttcccggtag tccgcacaaa gcaaccggcg catccaaacc gtgtattctg 1080
ggcgcgggat attattattg a 1101

```

<210> 440

<211> 366

<212> PRT

<213> *Neisseria meningitidis*

<400> 440

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Met Glu Thr Gln Leu Tyr Ile Gly Ile Met Ser Gly Thr Ser Met Asp
  1             5             10             15

```

```

Gly Ala Asp Ala Val Leu Ile Arg Met Asp Gly Gly Lys Trp Leu Gly
          20             25             30

```

```

Ala Glu Gly His Ala Phe Thr Pro Tyr Pro Gly Arg Leu Arg Arg Lys
          35             40             45

```

```

Leu Leu Asp Leu Gln Asp Thr Gly Ala Asp Glu Leu His Arg Ser Arg
          50             55             60

```

```

Met Leu Ser Gln Glu Leu Ser Arg Leu Tyr Ala Gln Thr Ala Ala Glu
          65             70             75             80

```

```

Leu Leu Cys Ser Gln Asn Leu Ala Pro Ser Asp Ile Thr Ala Leu Gly
          85             90             95

```

```

Cys His Gly Gln Thr Val Arg His Ala Pro Glu His Ser Tyr Ser Val
          100            105            110

```

```

Gln Leu Ala Asp Leu Pro Leu Leu Ala Glu Arg Thr Gln Ile Phe Thr
          115            120            125

```

```

Val Gly Asp Phe Arg Ser Arg Asp Leu Ala Ala Gly Gly Gln Gly Ala
          130            135            140

```

```

Pro Leu Val Pro Ala Phe His Glu Ala Leu Phe Arg Asp Asp Arg Glu
          145            150            155            160

```

```

Thr Arg Ala Val Leu Asn Ile Gly Gly Ile Ala Asn Ile Ser Val Leu
          165            170            175

```

```

Pro Pro Asp Ala Pro Ala Phe Gly Phe Asp Thr Gly Pro Gly Asn Met
          180            185            190

```

```

Leu Met Asp Ala Trp Met Gln Ala His Trp Gln Leu Pro Tyr Asp Lys
          195            200            205

```

Asn Gly Ala Lys Ala Ala Gln Gly Asn Ile Leu Pro Gln Leu Leu Asp
 210 215 220
 Arg Leu Leu Ala His Pro Tyr Phe Ala Gln Pro His Pro Lys Ser Thr
 225 230 235 240
 Gly Arg Glu Leu Phe Ala Leu Asn Trp Leu Glu Thr Tyr Leu Asp Gly
 245 250 255
 Gly Glu Asn Arg Tyr Asp Val Leu Arg Thr Leu Ser Arg Phe Thr Ala
 260 265 270
 Gln Thr Val Phe Asp Ala Val Ser His Ala Ala Ala Asp Ala Arg Gln
 275 280 285
 Met Tyr Ile Cys Gly Gly Gly Ile Arg Asn Pro Val Leu Met Ala Asp
 290 295 300
 Leu Ala Glu Cys Phe Gly Thr Arg Val Ser Leu His Ser Thr Ala Glu
 305 310 315 320
 Leu Asn Leu Asp Pro Gln Trp Val Glu Ala Ala Ala Phe Ala Trp Met
 325 330 335
 Ala Ala Cys Trp Val Asn Arg Ile Pro Gly Ser Pro His Lys Ala Thr
 340 345 350
 Gly Ala Ser Lys Pro Cys Ile Leu Gly Ala Gly Tyr Tyr Tyr
 355 360 365

<210> 441
 <211> 1101
 <212> DNA
 <213> Neisseria meningitidis

<400> 441
 atggaaacac agctttacat cggcatcatg tcgggaacca gcatggacgg ggcggatgcc 60
 gtactgatac ggatggacgg cggcaaatgg ctgggcgcgg aagggcacgc ctttaccccc 120
 taccocggca ggttacgccg ccaattgctg gatttgcagg acacaggcgc agacgaactg 180
 caccgcagca ggattttgtc gcaagaactc agccgcctat atgcgcaaac cgccgccgaa 240
 ctgctgtgca gtcaaaacct cgcaccgtcc gacattaccg ccctcggctg ccacgggcaa 300
 accgtccgac acgcgccgga acacggttac agcatacagc ttgccgattt gccgctgctg 360
 gcggaacgga cgcggatttt taccgtcggc gacttccgca gccgcgacct tgcggccggc 420
 ggacaaggcg cgccactcgt ccccgcttt caggaagccc tggtccgca caacagggaa 480
 acacgcgcgg tactgaacat cggcgggatt gccaacatca gcgtactccc ccccgacgca 540
 cccgccttcg gcttcgacac agggccgggc aatatgctga tggacgcgtg gacgcaggca 600
 cactggcagc ttccttacga caaaaacggt gcaaaggcgg cacaaggcaa catattgccg 660
 caactgctcg acaggctgct cgcccacccg tatttcgcac aacccccacc taaaagcacg 720
 gggcgcgaac tgtttgccct aaattggctc gaaacctacc ttgacggcgg cgaaaaccga 780
 tacgacgtat tgcggacgct ttcccgtttt accgcgcaaa ccgtttgcga cgccgtctca 840
 caccgcagcg cagatgcccg tcaaatgtac atttgcggcg gcggcatccg caatcctgtt 900
 ttaatggcgg atttggcaga atgtttcggc acacgcgttt ccctgcacag caccgccgac 960
 ctgaacctcg atccgcaatg ggtggaagcc gccgnatttg cgtggttggc ggcgtgttgg 1020
 attaatcgga ttcccggtag tccgcacaaa gcaaccggcg catccaaacc gtgtattctg 1080
 ancgcgggat attattattg a 1101

<210> 442
<211> 366
<212> PRT
<213> Neisseria meningitidis

<400> 442
Met Glu Thr Gln Leu Tyr Ile Gly Ile Met Ser Gly Thr Ser Met Asp
1 5 10 15
Gly Ala Asp Ala Val Leu Ile Arg Met Asp Gly Gly Lys Trp Leu Gly
20 25 30
Ala Glu Gly His Ala Phe Thr Pro Tyr Pro Gly Arg Leu Arg Arg Gln
35 40 45
Leu Leu Asp Leu Gln Asp Thr Gly Ala Asp Glu Leu His Arg Ser Arg
50 55 60
Ile Leu Ser Gln Glu Leu Ser Arg Leu Tyr Ala Gln Thr Ala Ala Glu
65 70 75 80
Leu Leu Cys Ser Gln Asn Leu Ala Pro Ser Asp Ile Thr Ala Leu Gly
85 90 95
Cys His Gly Gln Thr Val Arg His Ala Pro Glu His Gly Tyr Ser Ile
100 105 110
Gln Leu Ala Asp Leu Pro Leu Leu Ala Glu Arg Thr Arg Ile Phe Thr
115 120 125
Val Gly Asp Phe Arg Ser Arg Asp Leu Ala Ala Gly Gly Gln Gly Ala
130 135 140
Pro Leu Val Pro Ala Phe His Glu Ala Leu Phe Arg Asp Asn Arg Glu
145 150 155 160
Thr Arg Ala Val Leu Asn Ile Gly Gly Ile Ala Asn Ile Ser Val Leu
165 170 175
Pro Pro Asp Ala Pro Ala Phe Gly Phe Asp Thr Gly Pro Gly Asn Met
180 185 190
Leu Met Asp Ala Trp Thr Gln Ala His Trp Gln Leu Pro Tyr Asp Lys
195 200 205
Asn Gly Ala Lys Ala Ala Gln Gly Asn Ile Leu Pro Gln Leu Leu Asp
210 215 220
Arg Leu Leu Ala His Pro Tyr Phe Ala Gln Pro His Pro Lys Ser Thr
225 230 235 240
Gly Arg Glu Leu Phe Ala Leu Asn Trp Leu Glu Thr Tyr Leu Asp Gly
245 250 255

Gly Glu Asn Arg Tyr Asp Val Leu Arg Thr Leu Ser Arg Phe Thr Ala
 260 265 270
 Gln Thr Val Cys Asp Ala Val Ser His Ala Ala Ala Asp Ala Arg Gln
 275 280 285
 Met Tyr Ile Cys Gly Gly Gly Ile Arg Asn Pro Val Leu Met Ala Asp
 290 295 300
 Leu Ala Glu Cys Phe Gly Thr Arg Val Ser Leu His Ser Thr Ala Asp
 305 310 315 320
 Leu Asn Leu Asp Pro Gln Trp Val Glu Ala Ala Xaa Phe Ala Trp Leu
 325 330 335
 Ala Ala Cys Trp Ile Asn Arg Ile Pro Gly Ser Pro His Lys Ala Thr
 340 345 350
 Gly Ala Ser Lys Pro Cys Ile Leu Xaa Ala Gly Tyr Tyr Tyr
 355 360 365

<210> 443
 <211> 1101
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 443
 atggaacac agctttacat cggcatcatg tcggaacca gcatggacgg ggcggatgcc 60
 gtactgatac ggatggacgg cggcaaatgg ctgggcgcgg aagggcacgc ctttaccccc 120
 taccocggca ggttacgccg caaattgctg gatttgcagg acacaggcgc ggacgaactg 180
 caccgcagca ggatgttgtc gcaagaactc agccgcctgt acgcgcaaac cgccgccgaa 240
 ctgctgtgca gtcaaaacct cgcgccgtcc gacattaccg ccctcggtctg ccacgggcaa 300
 accgtcagac acgcgccgga acacagttac agcgtacagc ttgccgattt gccgctgctg 360
 gcggaacgga ctcagatttt taccgtcggc gacttccgca gccgcgacct tgcggccggc 420
 ggacaaggcg cgccgctcgt cccgcctttt cacgaagccc tgttccgcga cgacagggaa 480
 acacgcgcgg tactgaacat cggcgggatt gccaacatca gcgtactccc cccgcagca 540
 cccgccttcg gcttcgacac aggaccgggc aatatgctga tggacgcgtg gatgcaggca 600
 cactggcagc ttccttacga caaaaacggt gcaaaggcgg cacaaggcaa catattgccg 660
 caactgctcg acaggtgct cgcccacccg tatttcgcac aacccacccc taaaagcacg 720
 gggcgcgaa tgtttgcctt aaattggctc gaaacctacc ttgacggcgg cgaaaaccga 780
 tacgacgtat tgcggacgct ttcccgattc accgcgcaaa ccgttttcga cgccgtctca 840
 cagcagcgg cagatgcccg tcaaattgtac atttgcggcg gcggcatccg caatcctggt 900
 ttaatggcgg atttggcaga atgtttcggc acacgcgttt ccctgcacag caccgccgaa 960
 ctgaacctcg atccgcaatg ggtagaagcc gccgcgttcg catggatggc ggcgtgttgg 1020
 gtcaaccgca ttcccggtag tccgcacaaa gcaaccggcg catccaaacc gtgtattctg 1080
 ggcgcgggat attattattg a 1101

<210> 444
 <211> 366
 <212> PRT
 <213> *Neisseria meningitidis*

<400> 444
 Met Glu Thr Gln Leu Tyr Ile Gly Ile Met Ser Gly Thr Ser Met Asp
 1 5 10 15

Gly	Ala	Asp	Ala	Val	Leu	Ile	Arg	Met	Asp	Gly	Gly	Lys	Trp	Leu	Gly	20	25	30	
Ala	Glu	Gly	His	Ala	Phe	Thr	Pro	Tyr	Pro	Gly	Arg	Leu	Arg	Arg	Lys	35	40	45	
Leu	Leu	Asp	Leu	Gln	Asp	Thr	Gly	Ala	Asp	Glu	Leu	His	Arg	Ser	Arg	50	55	60	
Met	Leu	Ser	Gln	Glu	Leu	Ser	Arg	Leu	Tyr	Ala	Gln	Thr	Ala	Ala	Glu	65	70	75	80
Leu	Leu	Cys	Ser	Gln	Asn	Leu	Ala	Pro	Ser	Asp	Ile	Thr	Ala	Leu	Gly	85	90	95	
Cys	His	Gly	Gln	Thr	Val	Arg	His	Ala	Pro	Glu	His	Ser	Tyr	Ser	Val	100	105	110	
Gln	Leu	Ala	Asp	Leu	Pro	Leu	Leu	Ala	Glu	Arg	Thr	Gln	Ile	Phe	Thr	115	120	125	
Val	Gly	Asp	Phe	Arg	Ser	Arg	Asp	Leu	Ala	Ala	Gly	Gly	Gln	Gly	Ala	130	135	140	
Pro	Leu	Val	Pro	Ala	Phe	His	Glu	Ala	Leu	Phe	Arg	Asp	Asp	Arg	Glu	145	150	155	160
Thr	Arg	Ala	Val	Leu	Asn	Ile	Gly	Gly	Ile	Ala	Asn	Ile	Ser	Val	Leu	165	170	175	
Pro	Pro	Asp	Ala	Pro	Ala	Phe	Gly	Phe	Asp	Thr	Gly	Pro	Gly	Asn	Met	180	185	190	
Leu	Met	Asp	Ala	Trp	Met	Gln	Ala	His	Trp	Gln	Leu	Pro	Tyr	Asp	Lys	195	200	205	
Asn	Gly	Ala	Lys	Ala	Ala	Gln	Gly	Asn	Ile	Leu	Pro	Gln	Leu	Leu	Asp	210	215	220	
Arg	Leu	Leu	Ala	His	Pro	Tyr	Phe	Ala	Gln	Pro	His	Pro	Lys	Ser	Thr	225	230	235	240
Gly	Arg	Glu	Leu	Phe	Ala	Leu	Asn	Trp	Leu	Glu	Thr	Tyr	Leu	Asp	Gly	245	250	255	
Gly	Glu	Asn	Arg	Tyr	Asp	Val	Leu	Arg	Thr	Leu	Ser	Arg	Phe	Thr	Ala	260	265	270	
Gln	Thr	Val	Phe	Asp	Ala	Val	Ser	His	Ala	Ala	Ala	Asp	Ala	Arg	Gln	275	280	285	
Met	Tyr	Ile	Cys	Gly	Gly	Gly	Ile	Arg	Asn	Pro	Val	Leu	Met	Ala	Asp	290	295	300	
Leu	Ala	Glu	Cys	Phe	Gly	Thr	Arg	Val	Ser	Leu	His	Ser	Thr	Ala	Glu				

Ile Glu Asn Ile Phe Leu Gly Pro Val Lys Glu Gln Asn Arg Asp Arg
 100 105 110
 Ala Glu Ala Glu Ala Gln Ala Gly Lys Leu Leu Glu Arg Val Gly Leu
 115 120 125
 Leu Asp Arg Lys Asn Ala Tyr Pro Arg Glu Leu Ser Gly Gly Gln Lys
 130 135 140
 Gln Arg Ile Ala Ile Val Arg Ala Leu Cys Leu Asn Pro Glu Val Ile
 145 150 155 160
 Leu Leu Asp Glu Ile Thr Ala Ala Leu Asp Pro Glu Met Val Arg Glu
 165 170 175
 Val Leu Glu Val Val Leu Glu Leu Ala Arg Glu Gly Met Ser Met Leu
 180 185 190
 Ile Val Thr His Glu Met Gly Phe Ala Arg Lys Val Ala Asp Arg Ile
 195 200 205
 Val Phe Met Asp Lys Gly Gly Ile Val Glu Ser Ser Asp Pro Glu Thr
 210 215 220
 Phe Phe Ser Ala Pro Lys Ser Glu Arg Ala Arg Gln Phe Leu Ala Gly
 225 230 235 240
 Met Asp Tyr

<210> 447
 <211> 762
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 447
 gttgtcatga ttaaaatccg caatatccat aagacctttg gcgaaaacac tattttgcgc 60
 ggcacgcgatt tggatgtgtg caaagggcag gtgggtcgta tcctcgggcc ttccgggtca 120
 ggcaaaacga cgtttctgcg atgcctaaac gcgttggaag tgcccgaaga cggacaaatc 180
 gagttcgaca acgagcgacc gctgaaaatc gatttttcta aaaaaccaag caaacacgat 240
 attttggcac tgcgcccga atcakgcatg gtgtttcaac aatacaayct ctttccgcac 300
 aaaaccgcct tggaacacgt aatggaagga ccggttgccg tacagggcaa gcctgccgcc 360
 caagcgcgcg aagaggctct gaaactgctg gaaaaagtcg gcttgggcga caaagtggat 420
 ttgtatccct accagctttc cggcggtcag cagcagcgcg tcggcattgc ccgcgcattg 480
 gcgattcagc ctgaactgat gctgtttgac gaaccgactt ccgcgctcga tcctgaattg 540
 gtgcaagatg ttttggatmc catgaaggaa ttggcgcaag aaggctggac catggttgtc 600
 gttacgcatg aaatcaagtt cgccttagaa gtggcaacca ccgwcgctcg gatggacrgc 660
 ggcgttattg tcgaacaagg cagcccgcaa gatttgctcg accaccccaa acacgaacgg 720
 acgcggagat ttttaagcca aatccaatct accaagattt ga 762

<210> 448
 <211> 253
 <212> PRT
 <213> *Neisseria meningitidis*

<400> 448

```
Val Val Met Ile Lys Ile Arg Asn Ile His Lys Thr Phe Gly Glu Asn
 1          5          10          15

Thr Ile Leu Arg Gly Ile Asp Leu Asp Val Cys Lys Gly Gln Val Val
      20          25          30

Val Ile Leu Gly Pro Ser Gly Ser Gly Lys Thr Thr Phe Leu Arg Cys
      35          40          45

Leu Asn Ala Leu Glu Met Pro Glu Asp Gly Gln Ile Glu Phe Asp Asn
      50          55          60

Glu Arg Pro Leu Lys Ile Asp Phe Ser Lys Lys Pro Ser Lys His Asp
      65          70          75          80

Ile Leu Ala Leu Arg Arg Lys Ser Xaa Met Val Phe Gln Gln Tyr Asn
      85          90          95

Leu Phe Pro His Lys Thr Ala Leu Glu Asn Val Met Glu Gly Pro Val
      100          105          110

Ala Val Gln Gly Lys Pro Ala Ala Gln Ala Arg Glu Glu Ala Leu Lys
      115          120          125

Leu Leu Glu Lys Val Gly Leu Gly Asp Lys Val Asp Leu Tyr Pro Tyr
      130          135          140

Gln Leu Ser Gly Gly Gln Gln Gln Arg Val Gly Ile Ala Arg Ala Leu
      145          150          155          160

Ala Ile Gln Pro Glu Leu Met Leu Phe Asp Glu Pro Thr Ser Ala Leu
      165          170          175

Asp Pro Glu Leu Val Gln Asp Val Leu Asp Xaa Met Lys Glu Leu Ala
      180          185          190

Gln Glu Gly Trp Thr Met Val Val Val Thr His Glu Ile Lys Phe Ala
      195          200          205

Leu Glu Val Ala Thr Thr Xaa Val Val Met Asp Xaa Gly Val Ile Val
      210          215          220

Glu Gln Gly Ser Pro Gln Asp Leu Phe Asp His Pro Lys His Glu Arg
      225          230          235          240

Thr Arg Arg Phe Leu Ser Gln Ile Gln Ser Thr Lys Ile
      245          250
```

<210> 449

<211> 762

<212> DNA

<213> *Neisseria meningitidis*

<400> 449

gttgtcatga ttaaaatccg caatatccat aagaccttcg gcaaaaatac cattttgcgc 60

```

ggcatcaatt tggatgtgtg caaagggcag gtgggtcgtca tcctcggggc ttccgggtca 120
ggcaaaacga cgtttctgcg atgcctaaac gcgttggaag tgcccgaaga cggacaaatc 180
gagttcgaca acgagcgacc gctgaaaatc gatttttcta aaaaaccaag caaacacgat 240
attttggcac tgcgccgcaa atcaggcatg gtgtttcaac aatacaacct ctttccgcac 300
aaaaccgcct tggaaaacgt gatggaagga ccggttgccg tacagggcaa gcctgccgcc 360
caagcgcgcg aagaggctct gaaactgctg gaaaaagtgc gcttggggcg caaagtggat 420
ttgtatccct accagctttc cggcggtcag cagcagcgcg tcggcattgc ccgagcattg 480
gcgattcagc ccgagctgat gttgtttgac gaaccactt ccgcgcttga ccccgagttg 540
gtgcaagacg tgttgaacgc catgaaggaa ttggcgcggg aaggttggac gatggtcgtc 600
gttaccacag aaatcaagtt cgcgctggaa gttgccacga ccgttgctgt gatggacggc 660
ggcgttatcg tagagcaggg cagcccgaag gagttgttcg accaccccaa acacgaacgg 720
acgcggagat ttttaagcca aatccaatct accaagattt ga 762

```

<210> 450

<211> 253

<212> PRT

<213> *Neisseria meningitidis*

<400> 450

```

Val Val Met Ile Lys Ile Arg Asn Ile His Lys Thr Phe Gly Lys Asn
  1             5             10             15

```

```

Thr Ile Leu Arg Gly Ile Asn Leu Asp Val Cys Lys Gly Gln Val Val
      20             25             30

```

```

Val Ile Leu Gly Pro Ser Gly Ser Gly Lys Thr Thr Phe Leu Arg Cys
      35             40             45

```

```

Leu Asn Ala Leu Glu Met Pro Glu Asp Gly Gln Ile Glu Phe Asp Asn
      50             55             60

```

```

Glu Arg Pro Leu Lys Ile Asp Phe Ser Lys Lys Pro Ser Lys His Asp
      65             70             75             80

```

```

Ile Leu Ala Leu Arg Arg Lys Ser Gly Met Val Phe Gln Gln Tyr Asn
      85             90             95

```

```

Leu Phe Pro His Lys Thr Ala Leu Glu Asn Val Met Glu Gly Pro Val
      100            105            110

```

```

Ala Val Gln Gly Lys Pro Ala Ala Gln Ala Arg Glu Glu Ala Leu Lys
      115            120            125

```

```

Leu Leu Glu Lys Val Gly Leu Gly Asp Lys Val Asp Leu Tyr Pro Tyr
      130            135            140

```

```

Gln Leu Ser Gly Gly Gln Gln Gln Arg Val Gly Ile Ala Arg Ala Leu
      145            150            155            160

```

```

Ala Ile Gln Pro Glu Leu Met Leu Phe Asp Glu Pro Thr Ser Ala Leu
      165            170            175

```

```

Asp Pro Glu Leu Val Gln Asp Val Leu Asn Ala Met Lys Glu Leu Ala
      180            185            190

```

```

Arg Glu Gly Trp Thr Met Val Val Val Thr His Glu Ile Lys Phe Ala

```

195	200	205
Leu Glu Val Ala Thr Thr Val Val Val Met Asp Gly Gly Val Ile Val		
210	215	220
Glu Gln Gly Ser Pro Lys Glu Leu Phe Asp His Pro Lys His Glu Arg		
225	230	235 240
Thr Arg Arg Phe Leu Ser Gln Ile Gln Ser Thr Lys Ile		
245	250	

<210> 451
 <211> 756
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 451
 atgattaaaa tccgcaatat ccataagacc tttggcgaaa acaccatttt gcgcggcatc 60
 gatttggatg tgggcaaagg gcaggtggtc gtcattctcg ggccttccgg ctcggtgtaa 120
 acaacatttc tgcgctgcct aaacgcgttg gaaatgcccg aagacggaca aatcgagttc 180
 gacaacgcgc ggccgttacg cattgatttt tccaaaaaaa caagcaaaca cgataattttg 240
 gcaactgcgc gcaagtccgg aatggtattc caacaataca acctcttccc gcataaaacc 300
 gtgttggaac acgtgatgga agggccggtt gccgtacagg gcaagcctgc cgccaagcg 360
 cgcaagagg ctttgaaact gctggaaaaa gtcggcttgg gcgataaagt ggatttgtat 420
 ccctaccagc tttccggcgg tcagcagcag cgtgtcggta tcgcccgcgc actggcgatt 480
 cagcctgaat tgatgctgtt tgacgaaccc acttccgcgc tggaccccga gttggtgcaa 540
 gacgtgttg acgcatgaa ggaattggcg cgggaagggt ggacgatggt cgtcgttacc 600
 cacgaaatca agttcacgct ggaagttgcc acgaacgtcg tcgtgatgga cggcggcgtt 660
 atcgtagagc agggcagccc gaaagagttg ttcgaccacc tcaaacacga acggacgcgg 720
 agatttttaa gccaaatcca atctgccaag atttga 756

<210> 452
 <211> 251
 <212> PRT
 <213> Neisseria gonorrhoeae

<400> 452
 Met Ile Lys Ile Arg Asn Ile His Lys Thr Phe Gly Glu Asn Thr Ile
 1 5 10 15
 Leu Arg Gly Ile Asp Leu Asp Val Gly Lys Gly Gln Val Val Val Ile
 20 25 30
 Leu Gly Pro Ser Gly Ser Gly Lys Thr Thr Phe Leu Arg Cys Leu Asn
 35 40 45
 Ala Leu Glu Met Pro Glu Asp Gly Gln Ile Glu Phe Asp Asn Ala Arg
 50 55 60
 Pro Leu Arg Ile Asp Phe Ser Lys Lys Thr Ser Lys His Asp Ile Leu
 65 70 75 80
 Ala Leu Arg Arg Lys Ser Gly Met Val Phe Gln Gln Tyr Asn Leu Phe
 85 90 95

Pro His Lys Thr Val Leu Glu Asn Val Met Glu Gly Pro Val Ala Val
 100 105 110
 Gln Gly Lys Pro Ala Ala Gln Ala Arg Glu Glu Ala Leu Lys Leu Leu
 115 120 125
 Glu Lys Val Gly Leu Gly Asp Lys Val Asp Leu Tyr Pro Tyr Gln Leu
 130 135 140
 Ser Gly Gly Gln Gln Gln Arg Val Gly Ile Ala Arg Ala Leu Ala Ile
 145 150 155 160
 Gln Pro Glu Leu Met Leu Phe Asp Glu Pro Thr Ser Ala Leu Asp Pro
 165 170 175
 Glu Leu Val Gln Asp Val Leu Asp Ala Met Lys Glu Leu Ala Arg Glu
 180 185 190
 Gly Trp Thr Met Val Val Val Thr His Glu Ile Lys Phe Thr Leu Glu
 195 200 205
 Val Ala Thr Asn Val Val Val Met Asp Gly Gly Val Ile Val Glu Gln
 210 215 220
 Gly Ser Pro Lys Glu Leu Phe Asp His Leu Lys His Glu Arg Thr Arg
 225 230 235 240
 Arg Phe Leu Ser Gln Ile Gln Ser Ala Lys Ile
 245 250

<210> 453
 <211> 756
 <212> DNA
 <213> Neisseria meningitidis

<400> 453
 atgattaaaa tccgcaatat ccataagacc tttggcgaaa acactatattt gcgcggcatc 60
 gatttgatg tgtgcaaagg gcaggtggtc gtcattcctg ggccttcgg ctcaggcaaa 120
 acgacgtttc tgcgatgcct aaacgcgttg gaaatgccc aagacggaca aatcgagttc 180
 gacaacgagc gaccgctgaa aatcgatttt tctaaaaaac caagcaaaca cgatattttg 240
 gcaactgcgc gcaaatcagg catggtgttt caacaataca acctctttcc gcacaaaacc 300
 gccttgaaa acgtaatgga aggaccggtt gccgtacagg gcaagcctgc cgcccaagcg 360
 cgcgaaagagg ctctgaaact gctggaaaaa gtcggcttgg gcgacaaagt ggatttgtat 420
 ccctaccagc tttccggcgg tcagcagcag cgcgtcggca ttgcccgcgc attggcgatt 480
 cagcctgaac tgatgctgtt tgacgaaccg acttccgcgc tcgactctga attggtgcaa 540
 gatgttttgg ataccatgaa ggaattggcg caagaaggct ggaccatggt tgtcgttacg 600
 catgaaatca agttcgcctt agaagtggca accacgctcg tcgtgatgga cggcggcggt 660
 attgtcgaac aaggcagccc gcaagatttg ttcgaccacc ccaaacacga acggacgcgg 720
 agatttttaa gccaaatcca atctaccaag atttga 756

<210> 454
 <211> 251
 <212> PRT
 <213> Neisseria meningitidis

<400> 454

Met Ile Lys Ile Arg Asn Ile His Lys Thr Phe Gly Glu Asn Thr Ile
1 5 10 15
Leu Arg Gly Ile Asp Leu Asp Val Cys Lys Gly Gln Val Val Val Ile
20 25 30
Leu Gly Pro Ser Gly Ser Gly Lys Thr Thr Phe Leu Arg Cys Leu Asn
35 40 45
Ala Leu Glu Met Pro Glu Asp Gly Gln Ile Glu Phe Asp Asn Glu Arg
50 55 60
Pro Leu Lys Ile Asp Phe Ser Lys Lys Pro Ser Lys His Asp Ile Leu
65 70 75 80
Ala Leu Arg Arg Lys Ser Gly Met Val Phe Gln Gln Tyr Asn Leu Phe
85 90 95
Pro His Lys Thr Ala Leu Glu Asn Val Met Glu Gly Pro Val Ala Val
100 105 110
Gln Gly Lys Pro Ala Ala Gln Ala Arg Glu Glu Ala Leu Lys Leu Leu
115 120 125
Glu Lys Val Gly Leu Gly Asp Lys Val Asp Leu Tyr Pro Tyr Gln Leu
130 135 140
Ser Gly Gly Gln Gln Gln Arg Val Gly Ile Ala Arg Ala Leu Ala Ile
145 150 155 160
Gln Pro Glu Leu Met Leu Phe Asp Glu Pro Thr Ser Ala Leu Asp Pro
165 170 175
Glu Leu Val Gln Asp Val Leu Asp Thr Met Lys Glu Leu Ala Gln Glu
180 185 190
Gly Trp Thr Met Val Val Val Thr His Glu Ile Lys Phe Ala Leu Glu
195 200 205
Val Ala Thr Thr Val Val Val Met Asp Gly Gly Val Ile Val Glu Gln
210 215 220
Gly Ser Pro Gln Asp Leu Phe Asp His Pro Lys His Glu Arg Thr Arg
225 230 235 240
Arg Phe Leu Ser Gln Ile Gln Ser Thr Lys Ile
245 250

<210> 455

<211> 756

<212> DNA

<213> Neisseria meningitidis

<400> 455

atgattaaaa tccgcaatat ccataagacc ttccggcaaaa ataccatttt gcgcggcatc 60

```

aatttggatg tgtgcaaagg gcaggtggtc gtcatcctcg ggccttccgg ctcaggcaaa 120
acgacgtttc tgcgatgcct aaacgcgttg gaaatgcccg aagacggaca aatcgagttc 180
gacaacgagc gaccgctgaa aatcgatttt tctaaaaaac caagcaaaca cgatattttg 240
gcactgcgcc gcaaatacagg catggtgttt caacaataca acctctttcc gcacaaaacc 300
gccttgaaaa acgtgatgga aggaccggtt gccgtacagg gcaagcctgc cgccaagcg 360
cgcgaaagagg ctctgaaact gctggaaaaa gtcggcttgg gcgacaaagt ggatttgat 420
ccctaccagc tttccggcgg tcagcagcag cgcgtcggca ttgcccagagc attggcgatt 480
cagcccagagc tgatgttggt tgacgaaccc acttccgcgc ttgaccgcga gttggtgcaa 540
gacgtgttga acgccatgaa ggaattggcg cgggaagggt ggacgatggt cgtcgttacc 600
cacgaaatca agttcgcgct ggaagttgcc acgaccgttg tcgtgatgga cggcggcggt 660
atcgtagagc agggcagccc gaaagagttg ttcgaccacc ccaaacacga acggacgcgg 720
agatttttaa gccaaatcca atctaccaag atttga 756

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<210> 456

<211> 251

<212> PRT

<213> *Neisseria meningitidis*

<400> 456

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Met Ile Lys Ile Arg Asn Ile His Lys Thr Phe Gly Lys Asn Thr Ile
  1             5             10             15

Leu Arg Gly Ile Asn Leu Asp Val Cys Lys Gly Gln Val Val Val Ile
      20             25             30

Leu Gly Pro Ser Gly Ser Gly Lys Thr Thr Phe Leu Arg Cys Leu Asn
      35             40             45

Ala Leu Glu Met Pro Glu Asp Gly Gln Ile Glu Phe Asp Asn Glu Arg
      50             55             60

Pro Leu Lys Ile Asp Phe Ser Lys Lys Pro Ser Lys His Asp Ile Leu
      65             70             75             80

Ala Leu Arg Arg Lys Ser Gly Met Val Phe Gln Gln Tyr Asn Leu Phe
      85             90             95

Pro His Lys Thr Ala Leu Glu Asn Val Met Glu Gly Pro Val Ala Val
      100            105            110

Gln Gly Lys Pro Ala Ala Gln Ala Arg Glu Glu Ala Leu Lys Leu Leu
      115            120            125

Glu Lys Val Gly Leu Gly Asp Lys Val Asp Leu Tyr Pro Tyr Gln Leu
      130            135            140

Ser Gly Gly Gln Gln Gln Arg Val Gly Ile Ala Arg Ala Leu Ala Ile
      145            150            155            160

Gln Pro Glu Leu Met Leu Phe Asp Glu Pro Thr Ser Ala Leu Asp Pro
      165            170            175

Glu Leu Val Gln Asp Val Leu Asn Ala Met Lys Glu Leu Ala Arg Glu
      180            185            190

Gly Trp Thr Met Val Val Val Thr His Glu Ile Lys Phe Ala Leu Glu

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195	200	205
Val Ala Thr Thr Val Val Val Met Asp Gly Gly Val Ile Val Glu Gln		
210	215	220
Gly Ser Pro Lys Glu Leu Phe Asp His Pro Lys His Glu Arg Thr Arg		
225	230	235 240
Arg Phe Leu Ser Gln Ile Gln Ser Thr Lys Ile		
245	250	

<210> 457
 <211> 1032
 <212> DNA
 <213> *Neisseria gonorrhoeae*

<400> 457
 atgtcgggca atgcctcctc tccttcattc tccgcgcgcca tcgggctggt ttggttcggc 60
 gcggcggtat cgattgccga aatcagcacg ggtacgctgc tcgccccctt gggctggcag 120
 cgcggtcttg cgccctgct tttgggtcat gccgtcggcg gcgcgctggt ttttgccggc 180
 gcgtatatcg gcgcaactgac cggacgcagc tcgatggaaa gtgtgcgcct gtcgttcggc 240
 aaatgcggtt cagtgcgtgt ttcgtggcg aatatgctgc aactggccgg ctggacggcg 300
 gtgatgattt acgtcggcgc aacggtcagc tccgctttgg gcaaagtgtt gtgggacggc 360
 gaatcctttg tctggtgggc attggcaaac ggcgcaactga tcgtgctgtg gctggttttc 420
 ggcgacgcga gaacggggcg gctgaaaacc gtttcgatgc tgctgatgct gcttgccgtg 480
 ttgtggttga gcgtcgaagt gttcgcttcg tccggcacia acgcgcgcgc cgccgtttca 540
 gacggcatga ccttcggaac ggcagtcgaa ctgtccgcgc tcatgccgct ttcttggtg 600
 ccgctggccg ccgactacac gcgccaagca cgccgcccg ttgcggcaac cctgacggca 660
 acgctcgctt atacgctgac gggctgctgg atgtatgcct tgggtttggc ggcggctctg 720
 tttaccggag aaaccgacgt ggcgaaaatc ctgttggcg cggtcttggg cataacgggc 780
 attctggcag tcgtcctctc caccgttacc acaacgtttc tcgataccta ttccgccggc 840
 gcgagtgcga acaacatttc cgcgcgtttt gcggaatac ccgtcgtgt cggcgttacc 900
 ctgatccgca ccgtgcttgc cgtcatgctg cccgttacgc aatataaaaa ctctctgctg 960
 cttatccgct cggtattttg gccgatggcg ggtggttttg attgccgact tttttgtctt 1020
 aaaacggcgt ga 1032

<210> 458
 <211> 1
 <212> PRT
 <213> *Neisseria gonorrhoeae*

<400> 458
 Cys
 1

<210> 459
 <211> 1029
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 459
 atgtcgggca atgcctcctc tccttcattc tcctccgcca tcgggctgat ttggttcggc 60
 gcggcggtat cgattgccga aatcagcacg ggtacgctgc ttgcgccttt gggctggcag 120
 cgcggtcttg cggtcttact tttgggtcat gccgtcggcg gcgcgctggt ttttgccggc 180


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gcgtatatcg gcgcactgac cggacgcagc tcgatggaaa gcgtgcgccct gtcgttcggc 240
aaacgcgggtt cagtgtctgtt ttccgtggcg aatatgctgc aactggccgg ctggacggcg 300
gtgatgattt acgccggcgc aacggtcagc tccgctttgg gcaaagtgtt gtgggacggc 360
gaatcttttg tctgtgtgggc attggcaaac ggcgcgctga ttgtgctgtg gctggttttc 420
ggcgcacgca aaacaggcgg gctgaaaacc gtttcgatgc tgctgatgct gttggcgggtt 480
ctgtggctga gtgccgaagt cttttccacg gcaggcagca ccgccgcaca ggtttcagac 540
ggcatgagtt tcggaacggc agtcgagctg tccgccgtga tgccgctttc ctggctgccg 600
cttgccgccg actacacgcg ccacgcgcgc cgcccgtttg cggcaaccct gacggcaacg 660
ctcgctaca cgctgaccgg ctgctggatg tatgccttgg gtttggcagc ggcgttggtc 720
accggagaaa ccgacgtggc aaaaatcctg ctgggcgcar gtttgggtgc ggcaggcatt 780
ttggcggtcg tcctctccac cgttaccaca acgtttctcg atgcctattc cgccggcgcg 840
agtgcgaaca acatttccgc gcgttttgcg gaaacaccg tcgctgtcrg cgttaccctg 900
atcggcacgg tacttgccgt catgtgccc gttaccgaat atgaaaactt cctgctgctt 960
atcggtcgcg tatttgcgcc gatggcgggc ggttttgatt gccgactttt tcgtcttgaa 1020
acggcgtga 1029

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<210> 460
 <211> 342
 <212> PRT
 <213> *Neisseria meningitidis*

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<400> 460
Met Ser Gly Asn Ala Ser Ser Pro Ser Ser Ser Ser Ala Ile Gly Leu
  1              5              10              15

Ile Trp Phe Gly Ala Ala Val Ser Ile Ala Glu Ile Ser Thr Gly Thr
      20              25              30

Leu Leu Ala. Pro Leu Gly Trp Gln Arg Gly Leu Ala Ala Leu Leu Leu
      35              40              45

Gly His Ala Val Gly Gly Ala Leu Phe Phe Ala Ala Ala Tyr Ile Gly
      50              55              60

Ala Leu Thr Gly Arg Ser Ser Met Glu Ser Val Arg Leu Ser Phe Gly
      65              70              75              80

Lys Arg Gly Ser Val Leu Phe Ser Val Ala Asn Met Leu Gln Leu Ala
      85              90              95

Gly Trp Thr Ala Val Met Ile Tyr Ala Gly Ala Thr Val Ser Ser Ala
      100              105              110

Leu Gly Lys Val Leu Trp Asp Gly Glu Ser Phe Val Trp Trp Ala Leu
      115              120              125

Ala Asn Gly Ala Leu Ile Val Leu Trp Leu Val Phe Gly Ala Arg Lys
      130              135              140

Thr Gly Gly Leu Lys Thr Val Ser Met Leu Leu Met Leu Leu Ala Val
      145              150              155              160

Leu Trp Leu Ser Ala Glu Val Phe Ser Thr Ala Gly Ser Thr Ala Ala
      165              170              175

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Gln Val Ser Asp Gly Met Ser Phe Gly Thr Ala Val Glu Leu Ser Ala
 180 185 190
 Val Met Pro Leu Ser Trp Leu Pro Leu Ala Ala Asp Tyr Thr Arg His
 195 200 205
 Ala Arg Arg Pro Phe Ala Ala Thr Leu Thr Ala Thr Leu Ala Tyr Thr
 210 215 220
 Leu Thr Gly Cys Trp Met Tyr Ala Leu Gly Leu Ala Ala Ala Leu Phe
 225 230 235 240
 Thr Gly Glu Thr Asp Val Ala Lys Ile Leu Leu Gly Ala Xaa Leu Gly
 245 250 255
 Ala Ala Gly Ile Leu Ala Val Val Leu Ser Thr Val Thr Thr Thr Phe
 260 265 270
 Leu Asp Ala Tyr Ser Ala Gly Ala Ser Ala Asn Asn Ile Ser Ala Arg
 275 280 285
 Phe Ala Glu Thr Pro Val Ala Val Xaa Val Thr Leu Ile Gly Thr Val
 290 295 300
 Leu Ala Val Met Leu Pro Val Thr Glu Tyr Glu Asn Phe Leu Leu Leu
 305 310 315 320
 Ile Gly Ser Val Phe Ala Pro Met Ala Gly Gly Phe Asp Cys Arg Leu
 325 330 335
 Phe Arg Leu Glu Thr Ala
 340

<210> 461
 <211> 1028
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 461
 atgtcgggca atgcctcctc tccttcatct tccgcgcgcca tcgggctgat ttggttcggc 60
 gcggcggtat cgattgccga aatcagcacg ggtacactgc ttgcgccttt gggctggcag 120
 cgcgggtctgg cggctctgct tttgggtcat gccgtcggcg gcgcgctggt ttttgcggcg 180
 gcgtatatcg gcgcactgac cggacgcagc tcgatggaaa gcgtgcgcct gtcgttcggc 240
 aaacgcgggt cagtgtgtgt ttccgtggcg aatatgctgc aactggccgg ctggacggcg 300
 gtgatgattt acgccggcgc aacggtcagc tccgctttgg gcaaagtgtt gtgggacggc 360
 gaatcttttg tctggtgggc attggcaaac ggcgcgctga ttgtgctgtg gctggttttc 420
 ggcgcacgca aaacaggcgg gctgaaaacc gtttcgatgc tgetgatgct gttggcggtt 480
 ctgtggctga gtgccgaagt cttttccacg gcaggcagca ccgccgcaca ggtttcagac 540
 ggcatgagtt tcggaacggc agtcgagctg tccgcgctga tgccgctttc ttggtcgccg 600
 ctggccgcgg actacacgcg ccacgcgcgc cgcccgtttg cggcaaccct gacggcaacg 660
 ctgcctaca cgctgaccgg ctgctggatg tatgccttgg gtttggcagc ggcgttgttc 720
 accggagaaa ccgacgtggc aaaaatcctg ctgggcgcag gtttgggtgc ggcaggcatt 780
 ttggcggtcg tctgtcgac cgttaccacc acttttctcg atgcctactc cgccggcgta 840
 agtgccaaca atatttccgc caaactttcg gaaataccca tcgccgttgc cgtcgccgtt 900
 gtcggcacac tgcttgccgt cctcctgccc gttaccgaat atgaaaactt cctgctgctt 960
 atcggctcgg tatttgcgcc gatggcggcg gttttgattg ccgacttttt cgtcttgaaa 1020

<210> 462

<211> 342

<212> PRT

<213> *Neisseria meningitidis*

<400> 462

Met Ser Gly Asn Ala Ser Ser Pro Ser Ser Ser Ala Ala Ile Gly Leu
 1 5 10 15

Ile Trp Phe Gly Ala Ala Val Ser Ile Ala Glu Ile Ser Thr Gly Thr
 20 25 30

Leu Leu Ala Pro Leu Gly Trp Gln Arg Gly Leu Ala Ala Leu Leu Leu
 35 40 45

Gly His Ala Val Gly Gly Ala Leu Phe Phe Ala Ala Ala Tyr Ile Gly
 50 55 60

Ala Leu Thr Gly Arg Ser Ser Met Glu Ser Val Arg Leu Ser Phe Gly
 65 70 75 80

Lys Arg Gly Ser Val Leu Phe Ser Val Ala Asn Met Leu Gln Leu Ala
 85 90 95

Gly Trp Thr Ala Val Met Ile Tyr Ala Gly Ala Thr Val Ser Ser Ala
 100 105 110

Leu Gly Lys Val Leu Trp Asp Gly Glu Ser Phe Val Trp Trp Ala Leu
 115 120 125

Ala Asn Gly Ala Leu Ile Val Leu Trp Leu Val Phe Gly Ala Arg Lys
 130 135 140

Thr Gly Gly Leu Lys Thr Val Ser Met Leu Leu Met Leu Leu Ala Val
 145 150 155 160

Leu Trp Leu Ser Ala Glu Val Phe Ser Thr Ala Gly Ser Thr Ala Ala
 165 170 175

Gln Val Ser Asp Gly Met Ser Phe Gly Thr Ala Val Glu Leu Ser Ala
 180 185 190

Val Met Pro Leu Ser Trp Leu Pro Leu Ala Ala Asp Tyr Thr Arg His
 195 200 205

Ala Arg Arg Pro Phe Ala Ala Thr Leu Thr Ala Thr Leu Ala Tyr Thr
 210 215 220

Leu Thr Gly Cys Trp Met Tyr Ala Leu Gly Leu Ala Ala Ala Leu Phe
 225 230 235 240

Thr Gly Glu Thr Asp Val Ala Lys Ile Leu Leu Gly Ala Gly Leu Gly
 245 250 255

Ala Ala Gly Ile Leu Ala Val Val Leu Ser Thr Val Thr Thr Thr Phe
260 265 270

Leu Asp Ala Tyr Ser Ala Gly Val Ser Ala Asn Asn Ile Ser Ala Lys
275 280 285

Leu Ser Glu Ile Pro Ile Ala Val Ala Val Ala Val Val Gly Thr Leu
290 295 300

Leu Ala Val Leu Leu Pro Val Thr Glu Tyr Glu Asn Phe Leu Leu Leu
305 310 315 320

Ile Gly Ser Val Phe Ala Pro Met Ala Xaa Gly Phe Asp Cys Arg Leu
325 330 335

Phe Arg Leu Glu Thr Ala
340

<210> 463
<211> 867
<212> DNA
<213> Neisseria gonorrhoeae

<400> 463
atgccgtctg aaaccccaaa ggcacgccgc cggttttcag acggcatcgc gtccgacaac 60
cataccaaag aatccatcat gctcaccctg tacggcgaaa ctttcccttc gcggctgctg 120
ctcggcacgg cggcctaccc gaccctgaa atcctcaaac aatccgtccg aaccgcccgg 180
cccgcgatga ttaccgtctc gctgcgcgcg acgggatgcg gcggcgaggc gcacggtcag 240
gggttttggt cgctgcttca agaaaccggc gttcccgtcc tgccgaacac ggcaggctgc 300
caaagcgtgc aggaagcggg aacgacggcg caaatggcgc gcgaagtgtt tgaaaccgat 360
tgataaaaat tggaactcat cggcgacgac gacaccttgc agccggacgt gttccaactc 420
gtcgaagcgg cggaatcct gattaaagac ggcttcaaag tgctgcctta ttgcaccgaa 480
gacctgattg cctgccgcgc cctgctcgat gcgggctgtc aggcgttgat gccgtgggcg 540
gctcccatcg gcacgggttt gggggcgggt cacgcctatg cgctcaaaat cctgcgcgaa 600
cgctgcccg acacgccgct gattatcgac gcgggcttgg gtttgccttc ccaagcggca 660
caagtgatgg aatgggggtt tgacggcgta ttgttaaaca ccgcggtttc ccgcagcggc 720
gaccccgctc acatggcgcg cgcttcgca ctgcgcgtcg aatccggacg gctggcattt 780
gaagccgggc cggtcgaagc gcgaacaaa gcccaagcca gcacgccgac agtcggacaa 840
ccgttttggc attcggcgga atattga 867

<210> 464
<211> 288
<212> PRT
<213> Neisseria gonorrhoeae

<400> 464
Met Pro Ser Glu Thr Pro Lys Ala Arg Arg Arg Leu Ser Asp Gly Ile
1 5 10 15

Ala Ser Asp Asn His Thr Lys Glu Ser Ile Met Leu Thr Leu Tyr Gly
20 25 30

Glu Thr Phe Pro Ser Arg Leu Leu Leu Gly Thr Ala Ala Tyr Pro Thr
35 40 45

Pro Glu Ile Leu Lys Gln Ser Val Arg Thr Ala Arg Pro Ala Met Ile
 50 55 60
 Thr Val Ser Leu Arg Arg Thr Gly Cys Gly Gly Glu Ala His Gly Gln
 65 70 75 80
 Gly Phe Trp Ser Leu Leu Gln Glu Thr Gly Val Pro Val Leu Pro Asn
 85 90 95
 Thr Ala Gly Cys Gln Ser Val Gln Glu Ala Val Thr Thr Ala Gln Met
 100 105 110
 Ala Arg Glu Val Phe Glu Thr Asp Trp Ile Lys Leu Glu Leu Ile Gly
 115 120 125
 Asp Asp Asp Thr Leu Gln Pro Asp Val Phe Gln Leu Val Glu Ala Ala
 130 135 140
 Glu Ile Leu Ile Lys Asp Gly Phe Lys Val Leu Pro Tyr Cys Thr Glu
 145 150 155 160
 Asp Leu Ile Ala Cys Arg Arg Leu Leu Asp Ala Gly Cys Gln Ala Leu
 165 170 175
 Met Pro Trp Ala Ala Pro Ile Gly Thr Gly Leu Gly Ala Val His Ala
 180 185 190
 Tyr Ala Leu Lys Ile Leu Arg Glu Arg Leu Pro Asp Thr Pro Leu Ile
 195 200 205
 Ile Asp Ala Gly Leu Gly Leu Pro Ser Gln Ala Ala Gln Val Met Glu
 210 215 220
 Trp Gly Phe Asp Gly Val Leu Leu Asn Thr Ala Val Ser Arg Ser Gly
 225 230 235 240
 Asp Pro Val Asn Met Ala Arg Ala Phe Ala Leu Ala Val Glu Ser Gly
 245 250 255
 Arg Leu Ala Phe Glu Ala Gly Pro Val Glu Ala Arg Thr Lys Ala Gln
 260 265 270
 Ala Ser Thr Pro Thr Val Gly Gln Pro Phe Trp His Ser Ala Glu Tyr
 275 280 285

<210> 465
 <211> 810
 <212> DNA
 <213> *Neisseria gonorrhoeae*.

<400> 465
 cactatacaa aggaacccat tatgctcacc ctatacggcg aaactttccc ctgcgaggctg 60
 ctgctcggca cggctgcta cccgaccccc gaaatcctca aacaatccat ccaaaccgcc 120

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cagcctgcga tgattaccgt ctcgctgcgc cgcgcgaggaa gcggcgggcga ggcgcacggt 180
cagggggtttt ggtcgctgct tcaagaaacc ggcgttcccg tcctgccgaa cacggcaggc 240
tgccaaagcg tgcaggaagc ggtaacgacg gcgcaaattg cgcgcggaagt gtttgaaacc 300
gattggataa aattggaact catcgagat gacgacacct tgcagccgga tgtgttcacg 360
cttgtcgaag cggcggaaat cctgattaaa gacggcttca aagtgtgcc ttattgcacc 420
gaagacctga ttgcctgccg ccgcctgctc gacgcgggct gtcaggcggt gatgccgtgg 480
gcggccccga tcggcacggg tttgggcgcg gttcacgcct acgcgttgaa cgtcctgcgc 540
gaacgcctgc ccgacacgcc gctgattatc gacgcgggct tgggtttgcc ctcacaggcg 600
gcacaagtga tggaatgggg ctttgacggc gtgcttttga atactgccgt ttcccgcagc 660
ggcgatccgg tcaatatggc acgcgccttc gcactgcgcg tcgaatccgg acggctggca 720
tttgaagccg gaccggtcga agcacgcgac aaagcgcaag ccagcacgcc gacagtcgga 780
caaccgtttt ggcattcggc ggaatattga 810

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<210> 466

<211> 269

<212> PRT

<213> Neisseria meningitidis

<400> 466

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His Tyr Thr Lys Glu Pro Ile Met Leu Thr Leu Tyr Gly Glu Thr Phe
  1              5              10              15

Pro Ser Arg Leu Leu Leu Gly Thr Ala Ala Tyr Pro Thr Pro Glu Ile
          20              25              30

Leu Lys Gln Ser Ile Gln Thr Ala Gln Pro Ala Met Ile Thr Val Ser
          35              40              45

Leu Arg Arg Ala Gly Ser Gly Gly Glu Ala His Gly Gln Gly Phe Trp
          50              55              60

Ser Leu Leu Gln Glu Thr Gly Val Pro Val Leu Pro Asn Thr Ala Gly
          65              70              75              80

Cys Gln Ser Val Gln Glu Ala Val Thr Thr Ala Gln Met Ala Arg Glu
          85              90              95

Val Phe Glu Thr Asp Trp Ile Lys Leu Glu Leu Ile Gly Asp Asp Asp
          100              105              110

Thr Leu Gln Pro Asp Val Phe Gln Leu Val Glu Ala Ala Glu Ile Leu
          115              120              125

Ile Lys Asp Gly Phe Lys Val Leu Pro Tyr Cys Thr Glu Asp Leu Ile
          130              135              140

Ala Cys Arg Arg Leu Leu Asp Ala Gly Cys Gln Ala Leu Met Pro Trp
          145              150              155              160

Ala Ala Pro Ile Gly Thr Gly Leu Gly Ala Val His Ala Tyr Ala Leu
          165              170              175

Asn Val Leu Arg Glu Arg Leu Pro Asp Thr Pro Leu Ile Ile Asp Ala
          180              185              190

Gly Leu Gly Leu Pro Ser Gln Ala Ala Gln Val Met Glu Trp Gly Phe

```

195	200	205
Asp Gly Val Leu Leu Asn Thr Ala Val Ser Arg Ser Gly Asp Pro Val		
210	215	220
Asn Met Ala Arg Ala Phe Ala Leu Ala Val Glu Ser Gly Arg Leu Ala		
225	230	235 240
Phe Glu Ala Gly Pro Val Glu Ala Arg Asp Lys Ala Gln Ala Ser Thr		
	245	250 255
Pro Thr Val Gly Gln Pro Phe Trp His Ser Ala Glu Tyr		
	260	265

<210> 467
 <211> 819
 <212> DNA
 <213> Neisseria meningitidis

<400> 467

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ttgttaatcc actatacaaa ggaacccatt atgctcacc tgtacagcga aactttccct 60
tcgcggctgc tgctcggcac agcgcctac ccgaccctg aaatcctcaa acaatccgtc 120
cgaaccgccc ggcccgcat gattaccgtc tcgctgcgcc gcgcgggatg cggcggcgag 180
gcgcacggtc aggggttttg gtcgctgctt caagaaaccg gcgttcccg cctgccgaac 240
acggcaggct gccaaagcgt gcaggaagcg gtaacgacgg cgcaaattgg gcgcgaagtg 300
tttgaaccg attggattaa actcgaactc atcggcgacg acgacacctt gcagccggat 360
gtgttccaac ttgtcgaagc ggcggaatc ctgattaaag acggcttcaa agtgctgcct 420
tattgcaccg aagacctgat tgcctgccgc cgctgctcg acgcgggctg tcaggcggtt 480
atgccgtggg cgccccgat cggcacgggt ttgggcgcgg ttcacgccta cgcgttgaac 540
gtcctgcgcg aacgcctgcc cgacacgccg ctgattatcg acgcgggctt gggtttgccc 600
tcacaggcgg cacaagtgat ggaatggggc ttgacggcg tgcttttgaa tactgccgtt 660
tcccgacggc gcgatccggg caatatggca cgcgccttgc cactcgccgt cgaatccgga 720
cggttgcat ttgaagccgg accggtcgaa gcacgcgaca aagcgcaagc cagcacgccg 780
acagtcggac aaccgttttg gcattcggcg gaatattga 819

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<210> 468
 <211> 272
 <212> PRT
 <213> Neisseria meningitidis

<400> 468

Leu Leu Ile His Tyr Thr Lys Glu Pro Ile Met Leu Thr Leu Tyr Ser
1 5 10 15
Glu Thr Phe Pro Ser Arg Leu Leu Leu Gly Thr Ala Ala Tyr Pro Thr
20 25 30
Pro Glu Ile Leu Lys Gln Ser Val Arg Thr Ala Arg Pro Ala Met Ile
35 40 45
Thr Val Ser Leu Arg Arg Ala Gly Cys Gly Gly Glu Ala His Gly Gln
50 55 60
Gly Phe Trp Ser Leu Leu Gln Glu Thr Gly Val Pro Val Leu Pro Asn
65 70 75 80

Thr Ala Gly Cys Gln Ser Val Gln Glu Ala Val Thr Thr Ala Gln Met
 85 90 95
 Ala Arg Glu Val Phe Glu Thr Asp Trp Ile Lys Leu Glu Leu Ile Gly
 100 105 110
 Asp Asp Asp Thr Leu Gln Pro Asp Val Phe Gln Leu Val Glu Ala Ala
 115 120 125
 Glu Ile Leu Ile Lys Asp Gly Phe Lys Val Leu Pro Tyr Cys Thr Glu
 130 135 140
 Asp Leu Ile Ala Cys Arg Arg Leu Leu Asp Ala Gly Cys Gln Ala Leu
 145 150 155 160
 Met Pro Trp Ala Ala Pro Ile Gly Thr Gly Leu Gly Ala Val His Ala
 165 170 175
 Tyr Ala Leu Asn Val Leu Arg Glu Arg Leu Pro Asp Thr Pro Leu Ile
 180 185 190
 Ile Asp Ala Gly Leu Gly Leu Pro Ser Gln Ala Ala Gln Val Met Glu
 195 200 205
 Trp Gly Phe Asp Gly Val Leu Leu Asn Thr Ala Val Ser Arg Ser Gly
 210 215 220
 Asp Pro Val Asn Met Ala Arg Ala Phe Ala Leu Ala Val Glu Ser Gly
 225 230 235 240
 Arg Leu Ala Phe Glu Ala Gly Pro Val Glu Ala Arg Asp Lys Ala Gln
 245 250 255
 Ala Ser Thr Pro Thr Val Gly Gln Pro Phe Trp His Ser Ala Glu Tyr
 260 265 270

<210> 469

<211> 789

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 469

atgctcacc tgaacggcga aactttccct tcgcggtctg tgctcggcac ggccgcctac 60
 ccgacccctg aaatcctcaa acaatccgtc cgaaccgccc ggcccgcgat gattaccgtc 120
 tcgctgcgcc gcacgggatg cggcggcgag gcgcacggtc aggggttttg gtcgctgctt 180
 caagaaaccg gcgttcccgt cctgccgaac acggcaggct gccaaagcgt gcaggaagcg 240
 gtaacgacgg cgcaaattggc gcgcgaagtg tttgaaaccg attggataaa attggaactc 300
 atcggcgacg acgacacctt gcagccggac gtgttccaac tcgtcgaagc ggcggaaatc 360
 ctgattaaag acggcttcaa agtgctgcct tattgcaccg aagacctgat tgcctgccgc 420
 cgctgctcg atcggggctg tcaggcgctt atgccgtggg cggctcccat cggcacgggt 480
 ttggggggcg ttcaagccta tgcgctcaaa atcctgcgcg aacgcctgcc cgacacgccg 540
 ctgattatcg acgcgggctt gggtttgcct tcccaagcgg cacaagtgat ggaatggggg 600


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tttgacggcg tattgttaaa caccgccgtt tcccgacgcg ggcaccccg t caacatggcg 660
cgcgccttcg cactcgccgt cgaatccgga cggctggcat ttgaagccgg gccggtcgaa 720
gcgcgaacca aagcccaagc cagcagccg acagtcggac aaccgttttg gcattcggcg 780
gaatattga 789

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<210> 470
<211> 262
<212> PRT
<213> Neisseria gonorrhoeae

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<400> 470
Met Leu Thr Leu Tyr Gly Glu Thr Phe Pro Ser Arg Leu Leu Leu Gly
 1           5           10           15

Thr Ala Ala Tyr Pro Thr Pro Glu Ile Leu Lys Gln Ser Val Arg Thr
      20           25           30

Ala Arg Pro Ala Met Ile Thr Val Ser Leu Arg Arg Thr Gly Cys Gly
      35           40           45

Gly Glu Ala His Gly Gln Gly Phe Trp Ser Leu Leu Gln Glu Thr Gly
      50           55           60

Val Pro Val Leu Pro Asn Thr Ala Gly Cys Gln Ser Val Gln Glu Ala
      65           70           75           80

Val Thr Thr Ala Gln Met Ala Arg Glu Val Phe Glu Thr Asp Trp Ile
      85           90           95

Lys Leu Glu Leu Ile Gly Asp Asp Asp Thr Leu Gln Pro Asp Val Phe
      100          105          110

Gln Leu Val Glu Ala Ala Glu Ile Leu Ile Lys Asp Gly Phe Lys Val
      115          120          125

Leu Pro Tyr Cys Thr Glu Asp Leu Ile Ala Cys Arg Arg Leu Leu Asp
      130          135          140

Ala Gly Cys Gln Ala Leu Met Pro Trp Ala Ala Pro Ile Gly Thr Gly
      145          150          155          160

Leu Gly Ala Val His Ala Tyr Ala Leu Lys Ile Leu Arg Glu Arg Leu
      165          170          175

Pro Asp Thr Pro Leu Ile Ile Asp Ala Gly Leu Gly Leu Pro Ser Gln
      180          185          190

Ala Ala Gln Val Met Glu Trp Gly Phe Asp Gly Val Leu Leu Asn Thr
      195          200          205

Ala Val Ser Arg Ser Gly Asp Pro Val Asn Met Ala Arg Ala Phe Ala
      210          215          220

Leu Ala Val Glu Ser Gly Arg Leu Ala Phe Glu Ala Gly Pro Val Glu
      225          230          235          240

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Ala Arg Thr Lys Ala Gln Ala Ser Thr Pro Thr Val Gly Gln Pro Phe
245 250 255

Trp His Ser Ala Glu Tyr
260

<210> 471
<211> 789
<212> DNA
<213> *Neisseria meningitidis*

<400> 471
atgctcaccc tatacggcga aactttcccc tcgcggctgc tgctcggcac ggctgcctac 60
ccgacccccg aaatcctcaa acaatccatc caaaccgccc agcctgcgat gattaccgtc 120
tcgctgcgcc gcgcgggaag cggcggcgag gcgcacggtc aggggttttg gtcgctgctt 180
caagaaaccg gcgttcccgt cctgccgaac acggcaggct gccaaagcgt gcaggaagcg 240
gtaacgacgg cgcaaattggc gcgcgaagtg tttgaaaccg attggataaa attggaactc 300
atcgagatg acgacacctt gcagccggat gtgttcacgc ttgtcgaagc ggcggaaaac 360
ctgattaaag acggcttcaa agtgcctgcct tattgcaccg aagacctgat tgcctgccgc 420
cgctgtctcg acgcgggctg tcaggcgttg atgccgtggg cggccccgat cggcacgggt 480
ttgggcgcgg ttacgccta cgcgttgaac gtcctgcgcg aacgcctgcc cgacacgccg 540
ctgattatcg acgcgggctt gggtttgccc tcacaggcgg cacaagtgat ggaatggggc 600
tttgacggcg tgcttttgaa tactgccgtt tccgcagcg gcgatccggt caatatggca 660
cgcgcttcg cactcgccgt cgaatccgga cggtcggcat ttgaagccgg accggtcgaa 720
gcacgcgaca aagcgcaagc cagcacgccg acagtcggac aaccgttttg gcattcggcg 780
gaatattga 789

<210> 472
<211> 262
<212> PRT
<213> *Neisseria meningitidis*

<400> 472
Met Leu Thr Leu Tyr Gly Glu Thr Phe Pro Ser Arg Leu Leu Leu Gly
1 5 10 15
Thr Ala Ala Tyr Pro Thr Pro Glu Ile Leu Lys Gln Ser Ile Gln Thr
20 25 30
Ala Gln Pro Ala Met Ile Thr Val Ser Leu Arg Arg Ala Gly Ser Gly
35 40 45
Gly Glu Ala His Gly Gln Gly Phe Trp Ser Leu Leu Gln Glu Thr Gly
50 55 60
Val Pro Val Leu Pro Asn Thr Ala Gly Cys Gln Ser Val Gln Glu Ala
65 70 75 80
Val Thr Thr Ala Gln Met Ala Arg Glu Val Phe Glu Thr Asp Trp Ile
85 90 95
Lys Leu Glu Leu Ile Gly Asp Asp Asp Thr Leu Gln Pro Asp Val Phe
100 105 110

Gln Leu Val Glu Ala Ala Glu Ile Leu Ile Lys Asp Gly Phe Lys Val
 115 120 125
 Leu Pro Tyr Cys Thr Glu Asp Leu Ile Ala Cys Arg Arg Leu Leu Asp
 130 135 140
 Ala Gly Cys Gln Ala Leu Met Pro Trp Ala Ala Pro Ile Gly Thr Gly
 145 150 155 160
 Leu Gly Ala Val His Ala Tyr Ala Leu Asn Val Leu Arg Glu Arg Leu
 165 170 175
 Pro Asp Thr Pro Leu Ile Ile Asp Ala Gly Leu Gly Leu Pro Ser Gln
 180 185 190
 Ala Ala Gln Val Met Glu Trp Gly Phe Asp Gly Val Leu Leu Asn Thr
 195 200 205
 Ala Val Ser Arg Ser Gly Asp Pro Val Asn Met Ala Arg Ala Phe Ala
 210 215 220
 Leu Ala Val Glu Ser Gly Arg Leu Ala Phe Glu Ala Gly Pro Val Glu
 225 230 235 240
 Ala Arg Asp Lys Ala Gln Ala Ser Thr Pro Thr Val Gly Gln Pro Phe
 245 250 255
 Trp His Ser Ala Glu Tyr
 260

<210> 473
 <211> 789
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 473
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 ccgacccttg aaatcctcaa acaatccgtc cgaaccgccc ggcccgcgat gattaccgtc 120
 tcgctgcgcc gcgcgggatg cggcggcgag gcgcacggtc aggggttttg gtcgctgctt 180
 caagaaaccg gcgttcccgt cctgccgaac acggcaggct gccaaagcgt gcaggaagcg 240
 gtaacgacgg cgcaaattggc gcgcgaagtg ttgaaaccg attggattaa actcgaactc 300
 atcggcgacg acgacacctt gcagccggat gtgttccaac ttgtcgaagc ggcggaatc 360
 ctgattaaag acggcttcaa agtgctgcct tattgcaccg aagacctgat tgcctgccgc 420
 cgctgctcg acgcgggctg tcaggcggtg atgccgtggg cgccccgat cggcacgggt 480
 ttgggcgcgg ttacgccta cgcgttgaaac gtctgcgcg aacgcctgcc cgacacgccg 540
 ctgattatcg acgcgggctt gggtttgccc tcacaggcgg cacaagtgat ggaatggggc 600
 tttagcggcg tgcttttgaa tactgccgtt tcccgcagcg gcgatccggt caatatggca 660
 cgcgccttcg cactgcctgt cgaatccgga cggctggcat ttgaagccgg accggtcgaa 720
 gcacgcgaca aagcgcaagc cagcacgccg acagtccgac aaccgttttg gcattcggcg 780
 gaatattga 789

<210> 474
 <211> 262
 <212> PRT
 <213> *Neisseria meningitidis*

<400> 474

Met Leu Thr Leu Tyr Ser Glu Thr Phe Pro Ser Arg Leu Leu Leu Gly
1 5 10 15

Thr Ala Ala Tyr Pro Thr Pro Glu Ile Leu Lys Gln Ser Val Arg Thr
20 25 30

Ala Arg Pro Ala Met Ile Thr Val Ser Leu Arg Arg Ala Gly Cys Gly
35 40 45

Gly Glu Ala His Gly Gln Gly Phe Trp Ser Leu Leu Gln Glu Thr Gly
50 55 60

Val Pro Val Leu Pro Asn Thr Ala Gly Cys Gln Ser Val Gln Glu Ala
65 70 75 80

Val Thr Thr Ala Gln Met Ala Arg Glu Val Phe Glu Thr Asp Trp Ile
85 90 95

Lys Leu Glu Leu Ile Gly Asp Asp Asp Thr Leu Gln Pro Asp Val Phe
100 105 110

Gln Leu Val Glu Ala Ala Glu Ile Leu Ile Lys Asp Gly Phe Lys Val
115 120 125

Leu Pro Tyr Cys Thr Glu Asp Leu Ile Ala Cys Arg Arg Leu Leu Asp
130 135 140

Ala Gly Cys Gln Ala Leu Met Pro Trp Ala Ala Pro Ile Gly Thr Gly
145 150 155 160

Leu Gly Ala Val His Ala Tyr Ala Leu Asn Val Leu Arg Glu Arg Leu
165 170 175

Pro Asp Thr Pro Leu Ile Ile Asp Ala Gly Leu Gly Leu Pro Ser Gln
180 185 190

Ala Ala Gln Val Met Glu Trp Gly Phe Asp Gly Val Leu Leu Asn Thr
195 200 205

Ala Val Ser Arg Ser Gly Asp Pro Val Asn Met Ala Arg Ala Phe Ala
210 215 220

Leu Ala Val Glu Ser Gly Arg Leu Ala Phe Glu Ala Gly Pro Val Glu
225 230 235 240

Ala Arg Asp Lys Ala Gln Ala Ser Thr Pro Thr Val Gly Gln Pro Phe
245 250 255

Trp His Ser Ala Glu Tyr
260

<210> 475

<211> 873

<212> DNA

<213> Neisseria gonorrhoeae

<400> 475

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atggaaatat ggaatatggt gaacacttgg cccgatgccg tcccgatacg cgcggaggcg 60
gccgaatccg tggcggcggg cgcggttttg ctgctggcgc gcgcccttct gttgaatata 120
cacttcagac ggcatccgga ttctggcatc gaaagcaagc ggcggttttt ggttgccagc 180
cgcaatataa cgctgctttt ggtgctgttt tcgctggcat ttatctggtc ggcgcaaatt 240
caaacgctgg ctttgtcgat gtttgcggtg gcggcggcgg tcgtcgtggc gacaaaagaa 300
ctgattatgt gtctgtcggg cagtatttta aggtctgcca cccagcaata ctcggtcggc 360
gactatatcg aaatcaacgg cctgcgcggg cgcgtggtcg acatcaatct gttgaacacg 420
ctgatgatgc aggtcggtec gaaccccttg gtcggacagc ttgcgggaac caccgtttct 480
ttccccaaca gcctgttggt gagccacccc gtgcgcgcgg acaatatttt gggcgactat 540
gtcatccata cggtcgaaat ccccgttccc atccatttgg attcgatga agccgtatgc 600
cgtctgaaag ccgtactcga gcccttgtgc gcgccctaca tcccgcctat tcagcgggat 660
ttgaaaaacg tgcaggcgga aaaactgttt atcacgcccg ccgccaggcc gcgcgttacc 720
cgcgtaccgt acgacgacaa ggcataccgc atcatcgctc gcttcgcctc ccccgtttca 780
aagcggctgg aaatccaaca ggcggttatg gacgaatttt tgcgcgtaca ataccgcctg 840
ttaaatcatc ccgccggctc cgaaacactt taa 873
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<210> 476

<211> 290

<212> PRT

<213> Neisseria gonorrhoeae

<400> 476

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Met Glu Ile Trp Asn Met Leu Asn Thr Trp Pro Asp Ala Val Pro Ile
  1             5             10             15

Arg Ala Glu Ala Ala Glu Ser Val Ala Ala Val Ala Ala Leu Leu Leu
      20             25             30

Ala Arg Ala Leu Leu Leu Asn Ile His Phe Arg Arg His Pro Asp Phe
      35             40             45

Gly Ile Glu Ser Lys Arg Arg Phe Leu Val Ala Ser Arg Asn Ile Thr
      50             55             60

Leu Leu Leu Val Leu Phe Ser Leu Ala Phe Ile Trp Ser Ala Gln Ile
      65             70             75             80

Gln Thr Leu Ala Leu Ser Met Phe Ala Val Ala Ala Ala Val Val Val
      85             90             95

Ala Thr Lys Glu Leu Ile Met Cys Leu Ser Gly Ser Ile Leu Arg Ser
      100            105            110

Ala Thr Gln Gln Tyr Ser Val Gly Asp Tyr Ile Glu Ile Asn Gly Leu
      115            120            125

Arg Gly Arg Val Val Asp Ile Asn Leu Leu Asn Thr Leu Met Met Gln
      130            135            140

Val Gly Pro Asn Pro Leu Val Gly Gln Leu Ala Gly Thr Thr Val Ser
      145            150            155            160

Phe Pro Asn Ser Leu Leu Leu Ser His Pro Val Arg Arg Asp Asn Ile
```

165	170	175
Leu Gly Asp Tyr Val Ile His Thr Val Glu Ile Pro Val Pro Ile His		
180	185	190
Leu Asp Ser Asp Glu Ala Val Cys Arg Leu Lys Ala Val Leu Glu Pro		
195	200	205
Leu Cys Ala Pro Tyr Ile Pro Ala Ile Gln Arg Tyr Leu Glu Asn Val		
210	215	220
Gln Ala Glu Lys Leu Phe Ile Thr Pro Ala Ala Arg Pro Arg Val Thr		
225	230	235
Arg Val Pro Tyr Asp Asp Lys Ala Tyr Arg Ile Ile Val Arg Phe Ala		
245	250	255
Ser Pro Val Ser Lys Arg Leu Glu Ile Gln Gln Ala Val Met Asp Glu		
260	265	270
Phe Leu Arg Val Gln Tyr Arg Leu Leu Asn His Pro Ala Gly Ser Glu		
275	280	285
Thr Leu		
290		

<210> 477
 <211> 873
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 477
 atggaatat ggaatatgtt ggacacttgg ctcggtgccg tcccgatacg tgcggaggcg 60
 gtcgaatccg tggcggcggt tgcggctttg ctgctggcgc gcgcccttct gttgaatatc 120
 cacttcaaac ggcattccga ttctggcatc gaaagcaagc ggcgggtttt ggttgccagc 180
 cgcaatataa cgctgctttt ggtgctgttt tcgctggcat ttatctggtc ggcgcaaate 240
 caaacgctgg ctttgctgat gtttgcggtg gcggcgggcg tcgtcgtggc gacgaaggaa 300
 ctgattatgt gtctgtcggg cagtatttta aggtctgcc aacagcaata ctcggtcggc 360
 gactatatcg aaatcaacgg cctgcgcggg cgcgtggctg acatcaacct gttgaacacg 420
 ctgatgatgc aggtcgggtc gaaccccttg gtcggacagc ttgcgggaac caccgtttct 480
 ttcccccaaca gcctgttggt gagccacccc gtgcgcgcgc acaatatattt gggcgactat 540
 gtcattccata cggtcgaaat ccccgttccc atccatttgg attcgatga agccgtatgc 600
 cgtctgaaag ccgtactcga gcccttgtgc gcgcctaca tccccgccat ccaacggsat 660
 ttggaaaacg tgcaggcgga aaaactgttt atcacgccc cgcgcagacc gcgcgttacc 720
 cgcgtgccgt acgatgacaa ggcataccgc atcatcgctc gcttcgcttc ccccgtttca 780
 aagcggctgg aaatccaaca ggcggttatg gacgaatttt tgcgcgtaca ataccgcctg 840
 ttaaataacc ccgcccgttc cgaaacactt taa 873

<210> 478
 <211> 290
 <212> PRT
 <213> *Neisseria meningitidis*

<400> 478
 Met Glu Ile Trp Asn Met Leu Asp Thr Trp Leu Gly Ala Val Pro Ile

1	5	10	15
Arg Ala Glu	Ala Val Glu Ser Val	Ala Ala Val Ala Ala	Leu Leu Leu
	20	25	30
Ala Arg Ala	Leu Leu Leu Asn Ile His	Phe Lys Arg His	Pro Asp Phe
	35	40	45
Gly Ile Glu	Ser Lys Arg Arg Phe	Leu Val Ala Ser	Arg Asn Ile Thr
	50	55	60
Leu Leu Leu	Val Leu Phe Ser	Leu Ala Phe Ile	Trp Ser Ala Gln Ile
	65	70	75 80
Gln Thr Leu	Ala Leu Ser Met	Phe Ala Val Ala	Ala Val Val Val
	85	90	95
Ala Thr Lys	Glu Leu Ile Met	Cys Leu Ser Gly	Ser Ile Leu Arg Ser
	100	105	110
Ala Thr Gln	Gln Tyr Ser Val	Gly Asp Tyr Ile	Glu Ile Asn Gly Leu
	115	120	125
Arg Gly Arg	Val Val Asp Ile	Asn Leu Leu Asn	Thr Leu Met Met Gln
	130	135	140
Val Gly Pro	Asn Pro Leu Val	Gly Gln Leu Ala	Gly Thr Thr Val Ser
	145	150	155 160
Phe Pro Asn	Ser Leu Leu Leu	Ser His Pro Val	Arg Arg Asp Asn Ile
	165	170	175
Leu Gly Asp	Tyr Val Ile His	Thr Val Glu Ile	Pro Val Pro Ile His
	180	185	190
Leu Asp Ser	Asp Glu Ala Val	Cys Arg Leu Lys	Ala Val Leu Glu Pro
	195	200	205
Leu Cys Ala	Pro Tyr Ile Pro	Ala Ile Gln Arg	Xaa Leu Glu Asn Val
	210	215	220
Gln Ala Glu	Lys Leu Phe Ile	Thr Pro Ala Ala	Arg Pro Arg Val Thr
	225	230	235 240
Arg Val Pro	Tyr Asp Asp Lys	Ala Tyr Arg Ile	Ile Val Arg Phe Ala
	245	250	255
Ser Pro Val	Ser Lys Arg Leu	Glu Ile Gln Gln	Ala Val Met Asp Glu
	260	265	270
Phe Leu Arg	Val Gln Tyr Arg	Leu Leu Asn His	Pro Ala Gly Ser Glu
	275	280	285
Thr Leu			
290			

<210> 479
 <211> 873
 <212> DNA
 <213> Neisseria meningitidis

<400> 479
 atggaaatat ggaatatggt ggacacttgg ctcggtgccg tcccgatacg tgcggaggcg 60
 gtcgaatccg tggcgggtgg cgcggctttg ctgctggcgc gcgcccttct gttgaatatc 120
 cacttcaaac ggcatccgga ttctggcatc gaaagcaagc ggcggttttt ggttgccagc 180
 cgcaatataa cgctgctttt ggtgctggtt tcgctggcat ttatctggtc ggcgcaaadc 240
 caaacgctgg ctttgtcgat gtttgcgggtg gcggcgggcg tcgtcgtggc gacgaaggaa 300
 ctgattatgt gtctgtcggg cagcatttta aggtctgcca cccagcaata ctcggtcggc 360
 gactatatcg aaatcaacgg cctgcgcggg cgcgtggctg acatcaacct gttgaacacg 420
 ctgatgatgc aggtcgggtcc gaaccccttg gtcggacagc ttgcgggaac caccgtttct 480
 ttccccaaca gcctgttggg gagccacccc gtgcgcgcgc acaatatttt gggcgactac 540
 gtcattccata cggtcgaaat cccggttccc atccatttgg attcggtatga agcgtatgc 600
 cgtctgaaaag ccgtactcga gcccttgtgc gcgccctaca tccccgccat ccaacggcat 660
 ttggaaaacg tgcaggcgga aaaactgttt atcacgcccg ccgcaaaacc gcgcgttacc 720
 cgcgtgccgt acgatgacaa ggcataccgc atcatcgtcc gtttcgcctc ccccggttca 780
 aagcggctgg aaatccaaca ggcggttatg gacgaatttt tgcgcgtaca ataccgcctg 840
 ttaaattacc ccgccggctc cgaaacactt taa 873

<210> 480
 <211> 290
 <212> PRT
 <213> Neisseria meningitidis

<400> 480
 Met Glu Ile Trp Asn Met Leu Asp Thr Trp Leu Gly Ala Val Pro Ile
 1 5 10 15
 Arg Ala Glu Ala Val Glu Ser Val Ala Val Val Ala Ala Leu Leu Leu
 20 25 30
 Ala Arg Ala Leu Leu Leu Asn Ile His Phe Lys Arg His Pro Asp Phe
 35 40 45
 Gly Ile Glu Ser Lys Arg Arg Phe Leu Val Ala Ser Arg Asn Ile Thr
 50 55 60
 Leu Leu Leu Val Leu Phe Ser Leu Ala Phe Ile Trp Ser Ala Gln Ile
 65 70 75 80
 Gln Thr Leu Ala Leu Ser Met Phe Ala Val Ala Ala Val Val Val
 85 90 95
 Ala Thr Lys Glu Leu Ile Met Cys Leu Ser Gly Ser Ile Leu Arg Ser
 100 105 110
 Ala Thr Gln Gln Tyr Ser Val Gly Asp Tyr Ile Glu Ile Asn Gly Leu
 115 120 125
 Arg Gly Arg Val Val Asp Ile Asn Leu Leu Asn Thr Leu Met Met Gln
 130 135 140
 Val Gly Pro Asn Pro Leu Val Gly Gln Leu Ala Gly Thr Thr Val Ser

145		150		155		160									
Phe	Pro	Asn	Ser	Leu	Leu	Ser	His	Pro	Val	Arg	Arg	Asp	Asn	Ile	
				165				170					175		
Leu	Gly	Asp	Tyr	Val	Ile	His	Thr	Val	Glu	Ile	Pro	Val	Pro	Ile	His
				180				185					190		
Leu	Asp	Ser	Asp	Glu	Ala	Val	Cys	Arg	Leu	Lys	Ala	Val	Leu	Glu	Pro
		195					200					205			
Leu	Cys	Ala	Pro	Tyr	Ile	Pro	Ala	Ile	Gln	Arg	His	Leu	Glu	Asn	Val
	210					215					220				
Gln	Ala	Glu	Lys	Leu	Phe	Ile	Thr	Pro	Ala	Ala	Lys	Pro	Arg	Val	Thr
225					230					235					240
Arg	Val	Pro	Tyr	Asp	Asp	Lys	Ala	Tyr	Arg	Ile	Ile	Val	Arg	Phe	Ala
				245					250					255	
Ser	Pro	Val	Ser	Lys	Arg	Leu	Glu	Ile	Gln	Gln	Ala	Val	Met	Asp	Glu
			260					265					270		
Phe	Leu	Arg	Val	Gln	Tyr	Arg	Leu	Leu	Asn	Tyr	Pro	Ala	Gly	Ser	Glu
		275					280					285			
Thr	Leu														
	290														

<210> 481
 <211> 2037
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 481
 atgattgaca acgcactgct ccacttgggc gaagaacccc gttttaatca aatccaaacc 60
 gaagacatca aaccgcgcgt ccaaaccgcc atcgccgaag cgcgcggaca aatcgccgcc 120
 gtcaaagcgc aaacgcacac cggctgggcg aacaccgtcg agcgtctgac cggcatcacc 180
 gaacgcgtcg gcaggatttg gggcgtcgtg tcccatctca actccgtcgt cgacacgccc 240
 gaactgcgcg ccgtctataa cgaactgatg cctgaaatca ccgtcttctt caccgaaatc 300
 ggacaagaca tcgaactgta caaccgcttc aaaaccatca aaaattcccc cgaatttgca 360
 acgctttccc ccgcacaaaa aaccaagctc gatcacgacc tgcgcgattt cgtattgagc 420
 ggcgcggaac tgccgcccga acggcaggca gaactggcaa aactgcaaac cgaaggcgcg 480
 caactttccg ccaaattctc ccaaaacgtc ctagacgcga ccgacgcgtt cggcatttac 540
 tttgacgatg ccgcaccgct tgccggcatt cccgaagacg cgctcgccat gtttgccgcc 600
 gccgcgcaaa gcgaaggcaa aacagggttac aaaatcggct tgcagattcc gcactacctt 660
 gccgttatcc aatacgccgg caaccgcgaa ctgcgcgaac aaatctaccg cgcctacggt 720
 acccgtgcca gcgaactttc aaacgacggc aaattcgaca acaccgcaa catcgaccgc 780
 acgctcgaaa acgcattgaa aaccgcaaaa ctgctcggtt taaaaatta cgccgaattg 840
 tcgctggcaa ccaaaatggc ggacacgccc gaacagggtt taaacttctt gcacgacctc 900
 gccgcgcgcg ccaaacccta cgccgaaaaa gacctcgccg aagtcaaagc cttcgcccg 960
 gaacacctcg gtctcgccga cccgcagccg tgggacttga gctacgcgg cgaaaaactg 1020
 cgcgaaagcca aatacgcatc cagcgaaacc gaagtcaaaa aatacttccc cgtcggcaaa 1080
 gttctggcag gcctgttcgc ccaaatcaaa aaactctacg gcatcggtt cgccgaaaaa 1140
 accgttcccc tctggcacia agacgtgcgc tattttgaat tgcaacaaaa cggcaaaacc 1200
 atcggcggcg tttatatgga tttgtacgca cgcgaggca aacgcggcgg cgcgtggatg 1260

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aacgactaca aaggccgccc ccgctttgcc gacggcacgc tgcaactgcc caccgcctac 1320
ctcgtctgca acttcgcccc gcccgtcggc ggcaaagaag cgcgtttaag ccacgacgaa 1380
atcctcaccc tcttcacga aaccggccac ggactgcacc acctgcttac ccaagtggac 1440
gaactgggag tgctccgcat caacggcgta gaatgggacg cggtcgaact gcccagccag 1500
tttatggaaa acttcgtttg ggaatacaat gtattggcac aaatgtccgc ccacgaagaa 1560
accggcgagc ccctgccgaa agaactcttc gacaaaatgc tcgccgccaa aaacttccag 1620
cgcggtatgt tctcgtccg gcaaattggag ttcgccctct tcgatatgat gatttacagt 1680
gaaagcgacg aatgccgtct gaaaaactgg cagcagggtt tagacagcgt gcgcaaagaa 1740
gtcgcggtca tccaaccgcc cgaatacaac cgcttcgccca acagcttcgg ccacatcttc 1800
gccggcggct attccgcagg ctattacagc tacgcatggg ccgaagtcct cagcaccgat 1860
gcctacgccg cttttgaaga aagcgacgac gtccgccgcca caggcaaacg cttctggcaa 1920
gaaatccttg ccgtcggcgg ctcccgcagc gcggcggaat ccttcaaagc cttccgcgga 1980
cgcgaaccga gcatagacgc actgctgcgc caaagcgggt tcgacaacgc ggcttga . 2037

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<210> 482

<211> 678

<212> PRT

<213> Neisseria gonorrhoeae

<400> 482

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Met Ile Asp Asn Ala Leu Leu His Leu Gly Glu Glu Pro Arg Phe Asn
  1             5             10             15

Gln Ile Gln Thr Glu Asp Ile Lys Pro Ala Val Gln Thr Ala Ile Ala
          20             25             30

Glu Ala Arg Gly Gln Ile Ala Ala Val Lys Ala Gln Thr His Thr Gly
          35             40             45

Trp Ala Asn Thr Val Glu Arg Leu Thr Gly Ile Thr Glu Arg Val Gly
          50             55             60

Arg Ile Trp Gly Val Val Ser His Leu Asn Ser Val Val Asp Thr Pro
          65             70             75             80

Glu Leu Arg Ala Val Tyr Asn Glu Leu Met Pro Glu Ile Thr Val Phe
          85             90             95

Phe Thr Glu Ile Gly Gln Asp Ile Glu Leu Tyr Asn Arg Phe Lys Thr
          100             105             110

Ile Lys Asn Ser Pro Glu Phe Ala Thr Leu Ser Pro Ala Gln Lys Thr
          115             120             125

Lys Leu Asp His Asp Leu Arg Asp Phe Val Leu Ser Gly Ala Glu Leu
          130             135             140

Pro Pro Glu Arg Gln Ala Glu Leu Ala Lys Leu Gln Thr Glu Gly Ala
          145             150             155             160

Gln Leu Ser Ala Lys Phe Ser Gln Asn Val Leu Asp Ala Thr Asp Ala
          165             170             175

Phe Gly Ile Tyr Phe Asp Asp Ala Ala Pro Leu Ala Gly Ile Pro Glu
          180             185             190

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Asp Ala Leu Ala Met Phe Ala Ala Ala Ala Gln Ser Glu Gly Lys Thr
 195 200 205
 Gly Tyr Lys Ile Gly Leu Gln Ile Pro His Tyr Leu Ala Val Ile Gln
 210 215 220
 Tyr Ala Gly Asn Arg Glu Leu Arg Glu Gln Ile Tyr Arg Ala Tyr Val
 225 230 235 240
 Thr Arg Ala Ser Glu Leu Ser Asn Asp Gly Lys Phe Asp Asn Thr Ala
 245 250 255
 Asn Ile Asp Arg Thr Leu Glu Asn Ala Leu Lys Thr Ala Lys Leu Leu
 260 265 270
 Gly Phe Lys Asn Tyr Ala Glu Leu Ser Leu Ala Thr Lys Met Ala Asp
 275 280 285
 Thr Pro Glu Gln Val Leu Asn Phe Leu His Asp Leu Ala Arg Arg Ala
 290 295 300
 Lys Pro Tyr Ala Glu Lys Asp Leu Ala Glu Val Lys Ala Phe Ala Arg
 305 310 315 320
 Glu His Leu Gly Leu Ala Asp Pro Gln Pro Trp Asp Leu Ser Tyr Ala
 325 330 335
 Gly Glu Lys Leu Arg Glu Ala Lys Tyr Ala Phe Ser Glu Thr Glu Val
 340 345 350
 Lys Lys Tyr Phe Pro Val Gly Lys Val Leu Ala Gly Leu Phe Ala Gln
 355 360 365
 Ile Lys Lys Leu Tyr Gly Ile Gly Phe Ala Glu Lys Thr Val Pro Val
 370 375 380
 Trp His Lys Asp Val Arg Tyr Phe Glu Leu Gln Gln Asn Gly Lys Thr
 385 390 395 400
 Ile Gly Gly Val Tyr Met Asp Leu Tyr Ala Arg Glu Gly Lys Arg Gly
 405 410 415
 Gly Ala Trp Met Asn Asp Tyr Lys Gly Arg Arg Arg Phe Ala Asp Gly
 420 425 430
 Thr Leu Gln Leu Pro Thr Ala Tyr Leu Val Cys Asn Phe Ala Pro Pro
 435 440 445
 Val Gly Gly Lys Glu Ala Arg Leu Ser His Asp Glu Ile Leu Thr Leu
 450 455 460
 Phe His Glu Thr Gly His Gly Leu His His Leu Leu Thr Gln Val Asp
 465 470 475 480
 Glu Leu Gly Val Ser Gly Ile Asn Gly Val Glu Trp Asp Ala Val Glu
 485 490 495

Leu Pro Ser Gln Phe Met Glu Asn Phe Val Trp Glu Tyr Asn Val Leu
 500 505 510
 Ala Gln Met Ser Ala His Glu Glu Thr Gly Glu Pro Leu Pro Lys Glu
 515 520 525
 Leu Phe Asp Lys Met Leu Ala Ala Lys Asn Phe Gln Arg Gly Met Phe
 530 535 540
 Leu Val Arg Gln Met Glu Phe Ala Leu Phe Asp Met Met Ile Tyr Ser
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 Ala Asn Ser Phe Gly His Ile Phe Ala Gly Gly Tyr Ser Ala Gly Tyr
 595 600 605
 Tyr Ser Tyr Ala Trp Ala Glu Val Leu Ser Thr Asp Ala Tyr Ala Ala
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 Phe Glu Glu Ser Asp Asp Val Ala Ala Thr Gly Lys Arg Phe Trp Gln
 625 630 635 640
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<210> 483

<211> 1431

<212> DNA

<213> *Neisseria meningitidis*

<400> 483

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ctcgccgtcg ggnatcgcg cagcgngca gaatccttca aagccttccg cggccgcgaa 1380
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<210> 484

<211> 476

<212> PRT

<213> *Neisseria meningitidis*

<400> 484

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Glu Ala Arg Glu Gln Ile Ala Ala Ile Lys Ala Gln Thr His Thr Gly
      35             40             45

Trp Ala Asn Thr Val Glu Pro Leu Thr Gly Ile Thr Glu Arg Val Gly
      50             55             60

Arg Ile Trp Gly Val Val Ser His Leu Asn Cys Val Ala Asp Thr Pro
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Glu Leu Arg Ala Val Tyr Asn Glu Leu Met Pro Glu Ile Thr Val Phe
      85             90             95

Phe Thr Glu Ile Gly Gln Asp Ile Glu Leu Tyr Asn Arg Phe Lys Thr
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Ile Lys Asn Ser Pro Glu Phe Asp Thr Leu Ser Pro Ala Gln Lys Thr
      115            120            125

Lys Leu Asn His Tyr Ala Ser Glu Lys Leu Arg Glu Ala Lys Tyr Ala
      130            135            140

Phe Ser Glu Thr Xaa Val Lys Lys Tyr Phe Pro Val Gly Xaa Val Leu
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Asn Gly Leu Phe Ala Gln Xaa Lys Lys Leu Tyr Gly Ile Gly Phe Thr
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Gln Gln Asn Gly Glu Xaa Ile Gly Gly Val Tyr Met Asp Leu Tyr Ala

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Asp	Glu	Ile	Leu	Ile	Leu	Phe	His	Glu	Thr	Gly	His	Gly	Leu	His	His
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Leu	Leu	Thr	Gln	Val	Asp	Glu	Leu	Gly	Val	Ser	Gly	Ile	Asn	Gly	Val
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Xaa	Trp	Asp	Ala	Val	Glu	Leu	Pro	Ser	Gln	Phe	Met	Glu	Asn	Phe	Val
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Trp	Glu	Tyr	Asn	Val	Leu	Ala	Gln	Xaa	Ser	Ala	His	Glu	Glu	Thr	Gly
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Val	Pro	Leu	Pro	Lys	Glu	Leu	Xaa	Asp	Lys	Xaa	Leu	Ala	Ala	Lys	Asn
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Phe	Gln	Xaa	Gly	Met	Phe	Xaa	Val	Arg	Gln	Xaa	Glu	Phe	Ala	Leu	Phe
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Pro	Glu	Tyr	Asn	Arg	Phe	Ala	Leu	Ser	Phe	Gly	His	Ile	Phe	Ala	Gly
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Gly	Tyr	Ser	Ala	Ala	Xaa	Tyr	Ser	Tyr	Ala	Trp	Ala	Glu	Val	Leu	Ser
				405					410					415	
Ala	Asp	Ala	Tyr	Ala	Ala	Phe	Glu	Glu	Ser	Asp	Asp	Val	Ala	Ala	Thr
			420					425					430		
Gly	Lys	Arg	Phe	Trp	Gln	Glu	Ile	Leu	Ala	Val	Gly	Xaa	Ser	Arg	Ser
		435					440					445			
Gly	Ala	Glu	Ser	Phe	Lys	Ala	Phe	Arg	Gly	Arg	Glu	Pro	Ser	Ile	Asp
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<210> 485
 <211> 2037
 <212> DNA

<213> Neisseria meningitidis

<400> 485

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gaacgcgtcg gcaggatttg gggcgtggtg tcgcacctca actccgtcac cgacacgccc 240
gaactgcgcg ccgcctacaa tgaattaatg cccgaaatta ccgtcttctt caccgaaatc 300
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<210> 486

<211> 678

<212> PRT

<213> Neisseria meningitidis

<400> 486

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          20                      25                     30

Glu Ala Arg Glu Gln Ile Ala Ala Ile Lys Ala Gln Thr His Thr Gly
          35                      40                     45

Trp Ala Asn Thr Val Glu Pro Leu Thr Gly Ile Thr Glu Arg Val Gly
          50                      55                     60
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Arg	Ile	Trp	Gly	Val	Val	Ser	His	Leu	Asn	Ser	Val	Thr	Asp	Thr	Pro	65	70	75	80
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Phe	Thr	Glu	Ile	Gly	Gln	Asp	Ile	Glu	Leu	Tyr	Asn	Arg	Phe	Lys	Thr	100	105	110	
Ile	Lys	Asn	Ser	Pro	Glu	Phe	Asp	Thr	Leu	Ser	His	Ala	Gln	Lys	Thr	115	120	125	
Lys	Leu	Asn	His	Asp	Leu	Arg	Asp	Phe	Val	Leu	Ser	Gly	Ala	Glu	Leu	130	135	140	
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Gln	Leu	Ser	Ala	Lys	Phe	Ser	Gln	Asn	Val	Leu	Asp	Ala	Thr	Asp	Ala	165	170	175	
Phe	Gly	Ile	Tyr	Phe	Asp	Asp	Ala	Ala	Pro	Leu	Ala	Gly	Ile	Pro	Glu	180	185	190	
Asp	Ala	Leu	Ala	Met	Phe	Ala	Ala	Ala	Ala	Gln	Ser	Glu	Gly	Lys	Thr	195	200	205	
Gly	Tyr	Lys	Ile	Gly	Leu	Gln	Ile	Pro	His	Tyr	Leu	Ala	Val	Ile	Gln	210	215	220	
Tyr	Ala	Asp	Asn	Arg	Lys	Leu	Arg	Glu	Gln	Ile	Tyr	Arg	Ala	Tyr	Val	225	230	235	240
Thr	Arg	Ala	Ser	Glu	Leu	Ser	Asp	Asp	Gly	Lys	Phe	Asp	Asn	Thr	Ala	245	250	255	
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Gly	Phe	Lys	Asn	Tyr	Ala	Glu	Leu	Ser	Leu	Ala	Thr	Lys	Met	Ala	Asp	275	280	285	
Thr	Pro	Glu	Gln	Val	Leu	Asn	Phe	Leu	His	Asp	Leu	Ala	Arg	Arg	Ala	290	295	300	
Lys	Pro	Tyr	Ala	Glu	Lys	Asp	Leu	Ala	Glu	Val	Lys	Ala	Phe	Ala	Arg	305	310	315	320
Glu	Ser	Leu	Gly	Leu	Ala	Asp	Leu	Gln	Pro	Trp	Asp	Leu	Gly	Tyr	Ala	325	330	335	
Gly	Glu	Lys	Leu	Arg	Glu	Ala	Lys	Tyr	Ala	Phe	Ser	Glu	Thr	Glu	Val	340	345	350	
Lys	Lys	Tyr	Phe	Pro	Val	Gly	Lys	Val	Leu	Asn	Gly	Leu	Phe	Ala	Gln	355	360	365	

Ile	Lys	Lys	Leu	Tyr	Gly	Ile	Gly	Phe	Thr	Glu	Lys	Thr	Val	Pro	Val		
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Trp	His	Lys	Asp	Val	Arg	Tyr	Phe	Glu	Leu	Gln	Gln	Asn	Gly	Glu	Thr		
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			420					425					430				
Thr	Leu	Gln	Leu	Pro	Thr	Ala	Tyr	Leu	Val	Cys	Asn	Phe	Thr	Pro	Pro		
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Phe	His	Glu	Thr	Gly	His	Gly	Leu	His	His	Leu	Leu	Thr	Gln	Val	Asp		
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Glu	Leu	Gly	Val	Ser	Gly	Ile	Asn	Gly	Val	Glu	Trp	Asp	Ala	Val	Glu		
			485						490					495			
Leu	Pro	Ser	Gln	Phe	Met	Glu	Asn	Phe	Val	Trp	Glu	Tyr	Asn	Val	Leu		
			500					505					510				
Ala	Gln	Met	Ser	Ala	His	Glu	Glu	Thr	Gly	Val	Pro	Leu	Pro	Lys	Glu		
	515						520					525					
Leu	Phe	Asp	Lys	Met	Leu	Ala	Ala	Lys	Asn	Phe	Gln	Arg	Gly	Met	Phe		
530					535						540						
Leu	Val	Arg	Gln	Met	Glu	Phe	Ala	Leu	Phe	Asp	Met	Met	Ile	Tyr	Ser		
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Glu	Asp	Asp	Glu	Gly	Arg	Leu	Lys	Asn	Trp	Gln	Gln	Val	Leu	Asp	Ser		
			565						570					575			
Val	Arg	Lys	Glu	Val	Ala	Val	Val	Arg	Pro	Pro	Glu	Tyr	Asn	Arg	Phe		
			580					585					590				
Ala	Asn	Ser	Phe	Gly	His	Ile	Phe	Ala	Gly	Gly	Tyr	Ser	Ala	Gly	Tyr		
	595						600					605					
Tyr	Ser	Tyr	Ala	Trp	Ala	Glu	Val	Leu	Ser	Ala	Asp	Ala	Tyr	Ala	Ala		
610					615						620						
Phe	Glu	Glu	Ser	Asp	Asp	Val	Ala	Ala	Thr	Gly	Lys	Arg	Phe	Trp	Gln		
625				630						635					640		
Glu	Ile	Leu	Ala	Val	Gly	Gly	Ser	Arg	Ser	Ala	Ala	Glu	Ser	Phe	Lys		
			645					650						655			
Ala	Phe	Arg	Gly	Arg	Glu	Pro	Ser	Ile	Asp	Ala	Leu	Leu	Arg	His	Ser		
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Gly Phe Asp Asn Ala Ala
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<210> 487
<211> 1473
<212> DNA
<213> *Neisseria gonorrhoeae*

<400> 487
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gaacgcgtcg gcaggatttg gggcgtcgtg tcccatctca actccgtcgt cgacacgccc 240
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gccgttatcc aatacgccgg caaccgcgaa ctgcgcgaac aaatctaccg cgcctacgtt 720
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<210> 488
<211> 491
<212> PRT
<213> *Neisseria gonorrhoeae*

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35 40 45
Trp Ala Asn Thr Val Glu Arg Leu Thr Gly Ile Thr Glu Arg Val Gly
50 55 60
Arg Ile Trp Gly Val Val Ser His Leu Asn Ser Val Val Asp Thr Pro
65 70 75 80

Glu	Leu	Arg	Ala	Val	Tyr	Asn	Glu	Leu	Met	Pro	Glu	Ile	Thr	Val	Phe	
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Phe	Thr	Glu	Ile	Gly	Gln	Asp	Ile	Glu	Leu	Tyr	Asn	Arg	Phe	Lys	Thr	
				100					105					110		
Ile	Lys	Asn	Ser	Pro	Glu	Phe	Ala	Thr	Leu	Ser	Pro	Ala	Gln	Lys	Thr	
				115					120					125		
Lys	Leu	Asp	His	Asp	Leu	Arg	Asp	Phe	Val	Leu	Ser	Gly	Ala	Glu	Leu	
				130					135					140		
Pro	Pro	Glu	Arg	Gln	Ala	Glu	Leu	Ala	Lys	Leu	Gln	Thr	Glu	Gly	Ala	
				145					150					155		
Gln	Leu	Ser	Ala	Lys	Phe	Ser	Gln	Asn	Val	Leu	Asp	Ala	Thr	Asp	Ala	
				165					170					175		
Phe	Gly	Ile	Tyr	Phe	Asp	Asp	Ala	Ala	Pro	Leu	Ala	Gly	Ile	Pro	Glu	
				180					185					190		
Asp	Ala	Leu	Ala	Met	Phe	Ala	Ala	Ala	Ala	Gln	Ser	Glu	Gly	Lys	Thr	
				195					200					205		
Gly	Tyr	Lys	Ile	Gly	Leu	Gln	Ile	Pro	His	Tyr	Leu	Ala	Val	Ile	Gln	
				210					215					220		
Tyr	Ala	Gly	Asn	Arg	Glu	Leu	Arg	Glu	Gln	Ile	Tyr	Arg	Ala	Tyr	Val	
				225					230					235		
Thr	Arg	Ala	Ser	Glu	Leu	Ser	Asn	Asp	Gly	Lys	Phe	Asp	Asn	Thr	Ala	
				245					250					255		
Asn	Ile	Asp	Arg	Thr	Leu	Glu	Asn	Ala	Leu	Lys	Thr	Ala	Lys	Leu	Leu	
				260					265					270		
Gly	Phe	Lys	Asn	Tyr	Ala	Glu	Leu	Ser	Leu	Ala	Thr	Lys	Met	Ala	Asp	
				275					280					285		
Thr	Pro	Glu	Gln	Val	Leu	Asn	Phe	Leu	His	Asp	Leu	Ala	Arg	Arg	Ala	
				290					295					300		
Lys	Pro	Tyr	Ala	Glu	Lys	Asp	Leu	Ala	Glu	Val	Lys	Ala	Phe	Ala	Arg	
				305					310					315		
Glu	His	Leu	Gly	Leu	Ala	Asp	Pro	Gln	Pro	Trp	Asp	Leu	Ser	Tyr	Ala	
				325					330					335		
Gly	Glu	Lys	Leu	Arg	Glu	Ala	Lys	Tyr	Ala	Phe	Ser	Glu	Thr	Glu	Val	
				340					345					350		
Lys	Lys	Tyr	Phe	Pro	Val	Gly	Lys	Val	Leu	Ala	Gly	Leu	Phe	Ala	Gln	
				355					360					365		
Ile	Lys	Lys	Leu	Tyr	Gly	Ile	Gly	Phe	Ala	Glu	Lys	Thr	Val	Pro	Val	
				370					375					380		

Trp His Lys Asp Val Arg Tyr Phe Glu Leu Gln Gln Asn Gly Lys Thr
 385 390 395 400

Ile Gly Gly Val Tyr Met Asp Leu Tyr Ala Arg Glu Gly Lys Arg Gly
 405 410 415

Gly Ala Trp Met Asn Asp Tyr Lys Gly Arg Arg Arg Phe Ala Asp Gly
 420 425 430

Thr Leu Gln Leu Pro Thr Ala Tyr Leu Val Cys Asn Phe Ala Pro Pro
 435 440 445

Val Gly Gly Lys Glu Ala Arg Leu Ser His Asp Glu Ile Leu Thr Leu
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Phe His Glu Thr Gly His Gly Leu His His Leu Leu Thr Gln Val Asp
 465 470 475 480

Glu Leu Gly Val Ser Gly Ile Asn Gly Val Lys
 485 490

<210> 489

<211> 2037

<212> DNA

<213> *Neisseria meningitidis*

<400> 489

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 gaaatcctcg ccgtcggcgg atcgcgcagc gcggcagaat cttcaaagc cttccgcggc 1980
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<210> 490

<211> 678

<212> PRT

<213> *Neisseria meningitidis*

<400> 490

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Gln	Ile	Lys	Thr	Glu	Asp	Ile	Lys	Pro	Ala	Leu	Gln	Thr	Ala	Ile	Ala
			20					25					30		
Glu	Ala	Arg	Glu	Gln	Ile	Ala	Ala	Ile	Lys	Ala	Gln	Thr	His	Thr	Gly
	35					40					45				
Trp	Ala	Asn	Thr	Val	Glu	Pro	Leu	Thr	Gly	Ile	Thr	Glu	Arg	Val	Gly
	50					55				60					
Arg	Ile	Trp	Gly	Val	Val	Ser	His	Leu	Asn	Ser	Val	Ala	Asp	Thr	Pro
	65				70					75					80
Glu	Leu	Arg	Ala	Val	Tyr	Asn	Glu	Leu	Met	Pro	Glu	Ile	Thr	Val	Phe
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Phe	Thr	Glu	Ile	Gly	Gln	Asp	Ile	Glu	Leu	Tyr	Asn	Arg	Phe	Lys	Thr
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Ile	Lys	Asn	Ser	Pro	Glu	Phe	Asp	Thr	Leu	Ser	Pro	Ala	Gln	Lys	Thr
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Lys	Leu	Asn	His	Asp	Leu	Arg	Asp	Phe	Val	Leu	Ser	Gly	Ala	Glu	Leu
	130					135					140				
Pro	Pro	Glu	Gln	Gln	Ala	Glu	Leu	Ala	Lys	Leu	Gln	Thr	Glu	Gly	Ala
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Gln	Leu	Ser	Ala	Lys	Phe	Ser	Gln	Asn	Val	Leu	Asp	Ala	Thr	Asp	Ala
			165						170					175	
Phe	Gly	Ile	Tyr	Phe	Asp	Asp	Ala	Ala	Pro	Leu	Ala	Gly	Ile	Pro	Glu
		180						185					190		
Asp	Ala	Leu	Ala	Met	Phe	Ala	Ala	Ala	Gln	Ser	Glu	Ser	Lys	Thr	
	195						200				205				
Gly	Tyr	Lys	Ile	Gly	Leu	Gln	Ile	Pro	His	Tyr	Leu	Ala	Val	Ile	Gln
	210					215					220				
Tyr	Ala	Asp	Asn	Arg	Glu	Leu	Arg	Glu	Gln	Ile	Tyr	Arg	Ala	Tyr	Val

225		230		235		240
Thr Arg Ala Ser Glu Leu Ser Asp Asp Gly Lys Phe Asp Asn Thr Ala						
		245		250		255
Asn Ile Asp Arg Thr Leu Ala Asn Ala Leu Gln Thr Ala Lys Leu Leu						
		260		265		270
Gly Phe Lys Asn Tyr Ala Glu Leu Ser Leu Ala Thr Lys Met Ala Asp						
		275		280		285
Thr Pro Glu Gln Val Leu Asn Phe Leu His Asp Leu Ala Arg Arg Ala						
		290		295		300
Lys Pro Tyr Ala Glu Lys Asp Leu Ala Glu Val Lys Ala Phe Ala Arg						
305		310		315		320
Glu Ser Leu Asn Leu Ala Asp Leu Gln Pro Trp Asp Leu Gly Tyr Ala						
		325		330		335
Ser Glu Lys Leu Arg Glu Ala Lys Tyr Ala Phe Ser Glu Thr Glu Val						
		340		345		350
Lys Lys Tyr Phe Pro Val Gly Lys Val Leu Asn Gly Leu Phe Ala Gln						
		355		360		365
Ile Lys Lys Leu Tyr Gly Ile Gly Phe Thr Glu Lys Thr Val Pro Val						
		370		375		380
Trp His Lys Asp Val Arg Tyr Phe Glu Leu Gln Gln Asn Gly Glu Thr						
385		390		395		400
Ile Gly Gly Val Tyr Met Asp Leu Tyr Ala Arg Glu Gly Lys Arg Gly						
		405		410		415
Gly Ala Trp Met Asn Asp Tyr Lys Gly Arg Arg Arg Phe Ser Asp Gly						
		420		425		430
Thr Leu Gln Leu Pro Thr Ala Tyr Leu Val Cys Asn Phe Ala Pro Pro						
		435		440		445
Val Gly Gly Arg Glu Ala Arg Leu Ser His Asp Glu Ile Leu Ile Leu						
		450		455		460
Phe His Glu Thr Gly His Gly Leu His His Leu Leu Thr Gln Val Asp						
465		470		475		480
Glu Leu Gly Val Ser Gly Ile Asn Gly Val Glu Trp Asp Ala Val Glu						
		485		490		495
Leu Pro Ser Gln Phe Met Glu Asn Phe Val Trp Glu Tyr Asn Val Leu						
		500		505		510
Ala Gln Met Ser Ala His Glu Glu Thr Gly Val Pro Leu Pro Lys Glu						
		515		520		525
Leu Phe Asp Lys Met Leu Ala Ala Lys Asn Phe Gln Arg Gly Met Phe						

530		535		540
Leu Val Arg Gln Met	Glu Phe Ala Leu Phe Asp	Met Met Ile Tyr Ser		
545	550	555	560	
Glu Asp Asp Glu Gly Arg Leu Lys Asn Trp Gln Gln Val Leu Asp Ser				
	565	570	575	
Val Arg Lys Lys Val Ala Val Ile Gln Pro Pro Glu Tyr Asn Arg Phe				
	580	585	590	
Ala Leu Ser Phe Gly His Ile Phe Ala Gly Gly Tyr Ser Ala Gly Tyr				
	595	600	605	
Tyr Ser Tyr Ala Trp Ala Glu Val Leu Ser Ala Asp Ala Tyr Ala Ala				
	610	615	620	
Phe Glu Glu Ser Asp Asp Val Ala Ala Thr Gly Lys Arg Phe Trp Gln				
	625	630	635	640
Glu Ile Leu Ala Val Gly Gly Ser Arg Ser Ala Ala Glu Ser Phe Lys				
	645	650	655	
Ala Phe Arg Gly Arg Glu Pro Ser Ile Asp Ala Leu Leu Arg His Ser				
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Gly Phe Asp Asn Ala Val				
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<210> 491
 <211> 2037
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 491
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 gaacgcgtcg gcaggatttg gggcgtggtg tcgcacctca actcgtcac cgacacgcc 240
 gaactgcgcg ccgcctacaa tgaattaatg cccgaaatta ccgtcttctt caccgaaatc 300
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 accctctccc acgcgcaaaa aaccaaactc aaccacgatc tgcgcgattt cgtcctcagc 420
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 tttgacgatg ccgcaccgct tgccggcatt ccgaagacg cgctcgccat gtttgccgct 600
 gccgcgcaaa gcgaaggcaa aacaggctac aaaatcggtt tgcagattcc gcaactacct 660
 gccgtcatcc aatacgccga caaccgcaaa ctgcgcgaac aaatctaccg cgcctacggt 720
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 gccgcgcgcg ccaaacccta cgccgaaaaa gacctcgccg aagtcaaagc cttcgccccg 960
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<210> 492

<211> 678

<212> PRT

<213> Neisseria meningitidis

<400> 492

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Met Thr Asp Asn Ala Leu Leu His Leu Gly Glu Glu Pro Arg Phe Asp
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Gln Ile Lys Thr Glu Asp Ile Lys Pro Ala Leu Gln Thr Ala Ile Ala
      20             25             30

Glu Ala Arg Glu Gln Ile Ala Ala Ile Lys Ala Gln Thr His Thr Gly
      35             40             45

Trp Ala Asn Thr Val Glu Pro Leu Thr Gly Ile Thr Glu Arg Val Gly
      50             55             60

Arg Ile Trp Gly Val Val Ser His Leu Asn Ser Val Thr Asp Thr Pro
      65             70             75             80

Glu Leu Arg Ala Ala Tyr Asn Glu Leu Met Pro Glu Ile Thr Val Phe
      85             90             95

Phe Thr Glu Ile Gly Gln Asp Ile Glu Leu Tyr Asn Arg Phe Lys Thr
      100            105            110

Ile Lys Asn Ser Pro Glu Phe Asp Thr Leu Ser His Ala Gln Lys Thr
      115            120            125

Lys Leu Asn His Asp Leu Arg Asp Phe Val Leu Ser Gly Ala Glu Leu
      130            135            140

Pro Pro Glu Gln Gln Ala Glu Leu Ala Lys Leu Gln Thr Glu Gly Ala
      145            150            155            160

Gln Leu Ser Ala Lys Phe Ser Gln Asn Val Leu Asp Ala Thr Asp Ala
      165            170            175

Phe Gly Ile Tyr Phe Asp Asp Ala Ala Pro Leu Ala Gly Ile Pro Glu
      180            185            190

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Asp	Ala	Leu	Ala	Met	Phe	Ala	Ala	Ala	Ala	Gln	Ser	Glu	Gly	Lys	Thr	195	200	205
Gly	Tyr	Lys	Ile	Gly	Leu	Gln	Ile	Pro	His	Tyr	Leu	Ala	Val	Ile	Gln	210	215	220
Tyr	Ala	Asp	Asn	Arg	Lys	Leu	Arg	Glu	Gln	Ile	Tyr	Arg	Ala	Tyr	Val	225	230	235
Thr	Arg	Ala	Ser	Glu	Leu	Ser	Asp	Asp	Gly	Lys	Phe	Asp	Asn	Thr	Ala	245	250	255
Asn	Ile	Asp	Arg	Thr	Leu	Glu	Asn	Ala	Leu	Gln	Thr	Ala	Lys	Leu	Leu	260	265	270
Gly	Phe	Lys	Asn	Tyr	Ala	Glu	Leu	Ser	Leu	Ala	Thr	Lys	Met	Ala	Asp	275	280	285
Thr	Pro	Glu	Gln	Val	Leu	Asn	Phe	Leu	His	Asp	Leu	Ala	Arg	Arg	Ala	290	295	300
Lys	Pro	Tyr	Ala	Glu	Lys	Asp	Leu	Ala	Glu	Val	Lys	Ala	Phe	Ala	Arg	305	310	315
Glu	Ser	Leu	Gly	Leu	Ala	Asp	Leu	Gln	Pro	Trp	Asp	Leu	Gly	Tyr	Ala	325	330	335
Gly	Glu	Lys	Leu	Arg	Glu	Ala	Lys	Tyr	Ala	Phe	Ser	Glu	Thr	Glu	Val	340	345	350
Lys	Lys	Tyr	Phe	Pro	Val	Gly	Lys	Val	Leu	Asn	Gly	Leu	Phe	Ala	Gln	355	360	365
Ile	Lys	Lys	Leu	Tyr	Gly	Ile	Gly	Phe	Thr	Glu	Lys	Thr	Val	Pro	Val	370	375	380
Trp	His	Lys	Asp	Val	Arg	Tyr	Phe	Glu	Leu	Gln	Gln	Asn	Gly	Glu	Thr	385	390	395
Ile	Gly	Gly	Val	Tyr	Met	Asp	Leu	Tyr	Ala	Arg	Glu	Gly	Lys	Arg	Gly	405	410	415
Gly	Ala	Trp	Met	Asn	Asp	Tyr	Lys	Gly	Arg	Arg	Arg	Phe	Ser	Asp	Gly	420	425	430
Thr	Leu	Gln	Leu	Pro	Thr	Ala	Tyr	Leu	Val	Cys	Asn	Phe	Thr	Pro	Pro	435	440	445
Val	Gly	Gly	Lys	Glu	Ala	Arg	Leu	Ser	His	Asp	Glu	Ile	Leu	Thr	Leu	450	455	460
Phe	His	Glu	Thr	Gly	His	Gly	Leu	His	His	Leu	Leu	Thr	Gln	Val	Asp	465	470	475
Glu	Leu	Gly	Val	Ser	Gly	Ile	Asn	Gly	Val	Glu	Trp	Asp	Ala	Val	Glu	485	490	495

Leu Pro Ser Gln Phe Met Glu Asn Phe Val Trp Glu Tyr Asn Val Leu
500 505 510

Ala Gln Met Ser Ala His Glu Glu Thr Gly Val Pro Leu Pro Lys Glu
515 520 525

Leu Phe Asp Lys Met Leu Ala Ala Lys Asn Phe Gln Arg Gly Met Phe
530 535 540

Leu Val Arg Gln Met Glu Phe Ala Leu Phe Asp Met Met Ile Tyr Ser
545 550 555 560

Glu Asp Asp Glu Gly Arg Leu Lys Asn Trp Gln Gln Val Leu Asp Ser
565 570 575

Val Arg Lys Glu Val Ala Val Val Arg Pro Pro Glu Tyr Asn Arg Phe
580 585 590

Ala Asn Ser Phe Gly His Ile Phe Ala Gly Gly Tyr Ser Ala Gly Tyr
595 600 605

Tyr Ser Tyr Ala Trp Ala Glu Val Leu Ser Ala Asp Ala Tyr Ala Ala
610 615 620

Phe Glu Glu Ser Asp Asp Val Ala Ala Thr Gly Lys Arg Phe Trp Gln
625 630 635 640

Glu Ile Leu Ala Val Gly Gly Ser Arg Ser Ala Ala Glu Ser Phe Lys
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Ala Phe Arg Gly Arg Glu Pro Ser Ile Asp Ala Leu Leu Arg His Ser
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Gly Phe Asp Asn Ala Ala
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<210> 493

<211> 507

<212> DNA

<213> Neisseria gonorrhoeae

<400> 493

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cgcatctgtt tgggcgcgtg gcaaacggcg gctgccgtac aatcaaaatg tttggcgatt 420
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<210> 494

<211> 168

<212> PRT

<213> Neisseria gonorrhoeae

<400> 494

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20 25 30
Gln Tyr Arg Ala Ala Ser Ser Pro Asn Arg Gly Leu Pro Arg Phe Pro
35 40 45
Ile Thr Pro Thr Ala Ala Ala Val His Pro Tyr Pro Arg Phe Arg His
50 55 60
Leu Pro Phe Gln Ala Ala Gly Ile Gly Ala Glu Gln Ala Ala Val Glu
65 70 75 80
Ser Cys Phe Ile Arg Thr Asn Ala Leu Ala Val Gly Lys Ser Gly Arg
85 90 95
Pro Cys Gln Ile Met Arg Tyr Phe Gly Arg Val Leu Ser Phe Val Ser
100 105 110
Gly Gly Leu Phe Leu Arg Ala Ile Arg Ile Cys Leu Gly Ala Trp Gln
115 120 125
Thr Ala Ala Ala Val Gln Ser Lys Cys Leu Ala Ile Ser Cys Arg Gln
130 135 140
Ala Ser Gly Cys Arg Pro Thr Tyr Arg Ala Gly Phe Cys Leu Ser Asp
145 150 155 160
Leu Ala Ala Phe Arg Pro Val Thr
165

<210> 495

<211> 333

<212> DNA

<213> Neisseria meningitidis

<400> 495

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caaataatgc gttacttttg ccgggtcttg ttctttgtaa gtggtggtct ttttttgcgc 180
gttatcccca tctgtttgag tgcataagcaa atggtggctg ccgtacaatc aaaatgtttg 240
gcgatttcat gcagataggc atccgggtgt tgcccaacat attgagccgg tttttgccta 300
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<210> 496

<211> 110

<212> PRT

<213> Neisseria meningitidis

<400> 496

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 Val Gly Lys Phe Gly Arg Leu Cys Gln Ile Met Arg Tyr Phe Gly Arg
 35 40 45
 Val Leu Phe Phe Val Ser Gly Gly Leu Phe Leu Arg Val Ile Pro Ile
 50 55 60
 Cys Leu Ser Ala Xaa Gln Met Val Ala Ala Val Gln Ser Lys Cys Leu
 65 70 75 80
 Ala Ile Ser Cys Arg Xaa Ala Ser Gly Cys Cys Pro Thr Tyr Xaa Ala
 85 90 95
 Gly Phe Cys Leu Ser Asp Leu Thr Ala Phe Arg Pro Val Thr
 100 105 110

<210> 497
 <211> 333
 <212> DNA
 <213> Neisseria meningitidis

<400> 497
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 caaataatgc gttacttttg cgggtcttg ttctttgtaa gtggtggtct tttttgctg 180
 gttatcccca tctgtttgag tgcataagcaa atggtggctg ccgtacaatc aaaatgtttg 240
 gcgatttcat gcagataggc atcctggtgt tgcccaacat attgagccgg tttttgccta 300
 tccgatttga cggcatttag accgtaact tga 333

<210> 498
 <211> 107
 <212> PRT
 <213> Neisseria meningitidis

<400> 498
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 20 25 30
 Val Gly Lys Phe Gly Gln Leu Cys Gln Ile Met Arg Tyr Phe Gly Arg
 35 40 45
 Val Leu Phe Phe Val Ser Gly Gly Leu Phe Leu Arg Val Ile Pro Ile
 50 55 60
 Cys Leu Ser Ala Gln Met Val Ala Ala Val Gln Ser Lys Cys Leu Ala
 65 70 75 80

Ile Ser Cys Arg Ala Ser Trp Cys Cys Pro Thr Tyr Ala Gly Phe Cys
85 90 95

Leu Ser Asp Leu Thr Ala Phe Arg Pro Val Thr
100 105

<210> 499
<211> 840
<212> DNA
<213> Neisseria gonorrhoeae

<400> 499
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ggcgatgtcg atgccactac ggaagcggca acgcagaccc gcatccagcc tgcggacaa 180
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aacggcgact gggcgccgcg tatcgcgcaa ggcttcgata ccttgttcca acacgcgctg 360
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gctgcgcctg ccgacaatgc cgcttcagga acagcttctg ctctgccga tagtgcagct 540
ccggcagaag cgaaggcaga agacaagggt gcggcagccc ctgcggtcgg cgttgacggg 600
aaaaaagtct tcgaagcaac ctgtcagggt tgccacggcg gttcgattcc cggattccc 660
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aaacatgccc ttgaaggctt taacgcgatg ccggccaaag gcggcaatgc aggtttgagc 780
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<210> 500
<211> 279
<212> PRT
<213> Neisseria gonorrhoeae

<400> 500
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Lys Leu Ala Gly Ser Gly Ser Phe Gly Asp Val Asp Ala Thr Thr Glu
35 40 45
Ala Ala Thr Gln Thr Arg Ile Gln Pro Val Gly Gln Leu Thr Met Gly
50 55 60
Asp Gly Ile Pro Val Gly Glu Arg Gln Gly Glu Gln Ile Phe Gly Lys
65 70 75 80
Ile Cys Ile Gln Cys His Ala Ala Asp Ser Asn Val Pro Asn Ala Pro
85 90 95
Lys Leu Glu His Asn Gly Asp Trp Ala Pro Arg Ile Ala Gln Gly Phe
100 105 110
Asp Thr Leu Phe Gln His Ala Leu Asn Gly Phe Asn Ala Met Pro Ala

115	120	125
Lys Gly Gly Ala Ala Asp Leu Thr Asp Gln Glu Leu Lys Arg Ala Ile 130 135 140		
Thr Tyr Met Ala Asn Lys Ser Gly Gly Ser Phe Pro Asn Pro Asp Glu 145 150 155 160		
Ala Ala Pro Ala Asp Asn Ala Ala Ser Gly Thr Ala Ser Ala Pro Ala 165 170 175		
Asp Ser Ala Ala Pro Ala Glu Ala Lys Ala Glu Asp Lys Gly Ala Ala 180 185 190		
Ala Pro Ala Val Gly Val Asp Gly Lys Lys Val Phe Glu Ala Thr Cys 195 200 205		
Gln Val Cys His Gly Gly Ser Ile Pro Gly Ile Pro Gly Ile Gly Lys 210 215 220		
Lys Asp Asp Trp Ala Pro Arg Ile Lys Lys Gly Lys Glu Thr Leu His 225 230 235 240		
Lys His Ala Leu Glu Gly Phe Asn Ala Met Pro Ala Lys Gly Gly Asn 245 250 255		
Ala Gly Leu Ser Asp Asp Glu Val Lys Ala Ala Val Asp Tyr Met Ala 260 265 270		
Asn Gln Ser Gly Ala Lys Phe 275		

<210> 501
 <211> 619
 <212> DNA
 <213> Neisseria meningitidis

<400> 501
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 ccttgttcca acacgcgctg aacggcttta acgccatgcc tgcaaaaggc ggtgcggcag 180
 acctgaccga tcaggaactt aaacgggcca ttacttacat ggcgaacaaa agcggcggtt 240
 ctttcccga tcttgatgag gctgcgcctg ccgacaatgc cgcttcagga acagcttctg 300
 ctctgcccga tagtgcagct ccggcagaag cgaaggcaga agacaagggt gcggcacccc 360
 tgcggtcggc gttgacggtg aaaaagtctt cgaagcaacc tgtcaggtgt gccacggcgg 420
 ttcgattccc ggtattcccg gcataggcaa aaaagacgat tgggcaccgc gtatcaaaaa 480
 aggcaaagaa accttgacaa aacacgccct tgaaggcttt aacgcgatgc ctgccaaarg 540
 cggcaatgca ggtttgagcg atgacgaagt caaagcggct gttgactata tggcaaacca 600
 atccggtgca aaattctaa 619

<210> 502
 <211> 204
 <212> PRT
 <213> Neisseria meningitidis

<400> 502

Gly Glu Gln Ile Phe Gly Lys Ile Cys Ile Gln Cys His Ala Ala Asp
1 5 10 15
Ser Asn Val Pro Asn Ala Pro Lys Leu Glu His Asn Gly Asp Xaa Ala
20 25 30
Pro Arg Ile Gln Gly Phe Asp Thr Leu Phe Gln His Ala Leu Asn Gly
35 40 45
Phe Asn Ala Met Pro Ala Lys Gly Gly Ala Ala Asp Leu Thr Asp Gln
50 55 60
Glu Leu Lys Arg Ala Ile Thr Tyr Met Ala Asn Lys Ser Gly Gly Ser
65 70 75 80
Phe Pro Asn Pro Asp Glu Ala Ala Pro Ala Asp Asn Ala Ala Ser Gly
85 90 95
Thr Ala Ser Ala Pro Ala Asp Ser Ala Ala Pro Ala Glu Ala Lys Ala
100 105 110
Glu Asp Lys Gly Ala Ala Pro Ala Val Gly Val Asp Gly Lys Lys Val
115 120 125
Phe Glu Ala Thr Cys Gln Val Cys His Gly Gly Ser Ile Pro Gly Ile
130 135 140
Pro Gly Ile Gly Lys Lys Asp Asp Trp Ala Pro Arg Ile Lys Lys Gly
145 150 155 160
Lys Glu Thr Leu His Lys His Ala Leu Glu Gly Phe Asn Ala Met Pro
165 170 175
Ala Lys Xaa Gly Asn Ala Gly Leu Ser Asp Asp Glu Val Lys Ala Ala
180 185 190
Val Asp Tyr Met Ala Asn Gln Ser Gly Ala Lys Phe
195 200

<210> 503

<211> 840

<212> DNA

<213> Neisseria meningitidis

<400> 503

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ggcgatgtcg atgccactac ggaagcagca acgcagaccc gtatccagcc tgtcggacaa 180
ttgacgatgg gcgacggcat ccccgtcggc gaacgccaag gcgaacagat ttctcgcaaa 240
atctgtatcc aatgccacgc ggcggacagc aatgtgccga acgctccgaa actggaacac 300
aacggcgatt gggcgccgcg tatcgcgcaa ggcttcgata ccttgttcca acacgcgctg 360
aacggccttta acgccatgcc tgccaaaggc ggtgcggtag acctgaccga tcaggaactc 420
aaacgggcga ttacttacat ggcgaaacaa agcggcggtt ctttcccga tctgatgag 480
gctgcgcctg ccgacaatgc cgcttcagga acagcttctg ctctgcccga tagtcgagct 540
ccggcagaag cgaaggcaga agacaagggt gcggcagccc ctgcggtcgg cgttgacgggt 600

aaaaaagtct tcgaagcaac ctgtcaggtg tgccacggcg gttcgattcc cggatttccc 660
 ggcataaggca aaaaagacga ttgggcaccg cgtatcaaaa aaggcaaaga aaccttgcac 720
 aaacacgccc ttgaaggctt taacgcgatg cctgccaaaag gcggcaatgc aggtttgagc 780
 gatgacgaag tcaaagcggc tgttgactat atggcaaacc aatccggtgc aaaattctaa 840

<210> 504

<211> 279

<212> PRT

<213> *Neisseria meningitidis*

<400> 504

Met	Lys	Gln	Leu	Arg	Asp	Asn	Lys	Ala	Gln	Gly	Ser	Ala	Leu	Phe	Thr
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Leu	Val	Ser	Gly	Ile	Val	Ile	Val	Ile	Ala	Val	Leu	Tyr	Phe	Leu	Ile
			20					25					30		
Lys	Leu	Ala	Gly	Ser	Gly	Ser	Phe	Gly	Asp	Val	Asp	Ala	Thr	Thr	Glu
		35					40					45			
Ala	Ala	Thr	Gln	Thr	Arg	Ile	Gln	Pro	Val	Gly	Gln	Leu	Thr	Met	Gly
		50				55					60				
Asp	Gly	Ile	Pro	Val	Gly	Glu	Arg	Gln	Gly	Glu	Gln	Ile	Phe	Gly	Lys
65					70				75						80
Ile	Cys	Ile	Gln	Cys	His	Ala	Ala	Asp	Ser	Asn	Val	Pro	Asn	Ala	Pro
				85					90					95	
Lys	Leu	Glu	His	Asn	Gly	Asp	Trp	Ala	Pro	Arg	Ile	Ala	Gln	Gly	Phe
			100					105					110		
Asp	Thr	Leu	Phe	Gln	His	Ala	Leu	Asn	Gly	Phe	Asn	Ala	Met	Pro	Ala
		115					120					125			
Lys	Gly	Gly	Ala	Val	Asp	Leu	Thr	Asp	Gln	Glu	Leu	Lys	Arg	Ala	Ile
	130					135					140				
Thr	Tyr	Met	Ala	Asn	Lys	Ser	Gly	Gly	Ser	Phe	Pro	Asn	Pro	Asp	Glu
145					150					155					160
Ala	Ala	Pro	Ala	Asp	Asn	Ala	Ala	Ser	Gly	Thr	Ala	Ser	Ala	Pro	Ala
			165						170					175	
Asp	Ser	Ala	Ala	Pro	Ala	Glu	Ala	Lys	Ala	Glu	Asp	Lys	Gly	Ala	Ala
			180					185					190		
Ala	Pro	Ala	Val	Gly	Val	Asp	Gly	Lys	Lys	Val	Phe	Glu	Ala	Thr	Cys
		195					200					205			
Gln	Val	Cys	His	Gly	Gly	Ser	Ile	Pro	Gly	Ile	Pro	Gly	Ile	Gly	Lys
	210					215					220				
Lys	Asp	Asp	Trp	Ala	Pro	Arg	Ile	Lys	Lys	Gly	Lys	Glu	Thr	Leu	His
225					230					235					240

Lys His Ala Leu Glu Gly Phe Asn Ala Met Pro Ala Lys Gly Gly Asn
245 250 255

Ala Gly Leu Ser Asp Asp Glu Val Lys Ala Ala Val Asp Tyr Met Ala
260 265 270

Asn Gln Ser Gly Ala Lys Phe
275

<210> 505

<211> 378

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 505

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agcggcagcg cgcaaggcgt attcggctct gccggcaacg ccaacttcct cagccgctcg 180
accgccgttg cagcaacatt tttctttgca acctgcatgg gctatggtgt atattcacac 240
ccacacgaca aaacacgggt tggacttcag caacatacga cagactcagc aagcacccaa 300
acccgtaagc aataccgaac cttctgcccc tgttcctcag cagcagaaat aacagttttt 360
caaatgccga catggtga 378

<210> 506

<211> 125

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 506

Met Glu Ala Phe Lys Thr Leu Ile Trp Ile Ile Asn Ile Ile Ser Ala
1 5 10 15

Leu Ala Val Ile Val Leu Val Leu Leu Gln His Gly Lys Gly Ala Asp
20 25 30

Ala Gly Ala Thr Phe Gly Ser Gly Ser Gly Ser Ala Gln Gly Val Phe
35 40 45

Gly Ser Ala Gly Asn Ala Asn Phe Leu Ser Arg Ser Thr Ala Val Ala
50 55 60

Ala Thr Phe Phe Phe Ala Thr Cys Met Gly Tyr Gly Val Tyr Ser His
65 70 75 80

Pro His Asp Lys Thr Arg Phe Gly Leu Gln Gln His Thr Thr Asp Ser
85 90 95

Ala Ser Thr Gln Thr Arg Lys Gln Tyr Arg Thr Phe Cys Pro Cys Ser
100 105 110

Ser Ala Ala Glu Ile Thr Val Phe Gln Met Pro Thr Trp
115 120 125

<210> 507

<211> 114
<212> DNA
<213> *Neisseria meningitidis*

<400> 507
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gtgttagtat tgctccaaca cggcaaaggc gcggatgccg gcgcgacttt cgga 114

<210> 508
<211> 38
<212> PRT
<213> *Neisseria meningitidis*

<400> 508
Met Glu Pro Phe Lys Thr Leu Ile Trp Ile Val Asn Leu Ile Ser Ala
1 5 10 15
Leu Ala Val Phe Val Leu Val Leu Leu Gln His Gly Lys Gly Ala Asp
20 25 30
Ala Gly Ala Thr Phe Gly
35

<210> 509
<211> 378
<212> DNA
<213> *Neisseria meningitidis*

<400> 509
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gtgttagtat tgctccaaca cggcaaaggc gcggatgccg gcgcgacttt cggatcggga 120
agcggcagcg cgcaaggcgt attcggctct gccggcaacg ctaacttcct cagccgctcg 180
accgccgttg cagcaacatt tttctttgca acctgcatgg gctatgggtgt atattcacac 240
ccacacgaca aaacacgggt tggacttcag caacgtacaa caaactcagc aagcacccaa 300
acccgtaagc aataccgaac cttctgcccc tgttcctcag cagcagaaat aacagttttt 360
caaatgccga catggtga 378

<210> 510
<211> 125
<212> PRT
<213> *Neisseria meningitidis*

<400> 510
Met Glu Ala Phe Lys Thr Leu Ile Trp Ile Val Asn Ile Ile Ser Ala
1 5 10 15
Leu Ala Val Ile Val Leu Val Leu Leu Gln His Gly Lys Gly Ala Asp
20 25 30
Ala Gly Ala Thr Phe Gly Ser Gly Ser Gly Ser Ala Gln Gly Val Phe
35 40 45
Gly Ser Ala Gly Asn Ala Asn Phe Leu Ser Arg Ser Thr Ala Val Ala
50 55 60

Ala Thr Phe Phe Phe Ala Thr Cys Met Gly Tyr Gly Val Tyr Ser His
65 70 75 80

Pro His Asp Lys Thr Arg Phe Gly Leu Gln Gln Arg Thr Thr Asn Ser
85 90 95

Ala Ser Thr Gln Thr Arg Lys Gln Tyr Arg Thr Phe Cys Pro Cys Ser
100 105 110

Ser Ala Ala Glu Ile Thr Val Phe Gln Met Pro Thr Trp
115 120 125

<210> 511

<211> 1596

<212> DNA

<213> Neisseria gonorrhoeae

<400> 511

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agcgcaggca cggtgaaagg taagaaaacc ggcaaattcg ccacctccga ctggatggac 180
atcgagaagc agcgcggcat ttccgtggca tcaagcgtga tgcagttcga ctacaaagac 240
cacaccgtca acctcttgga cagcgcggga caccaagact tctccgaaga cacctaccgc 300
gttttaaccg cagtggacag cgccttgatg gtcacgcacg cggcaaaagg cgtggaagcg 360
caaaccatca aactcttgaa cgtctgccgc ctgcgcgata cgccgattgt taccttcatt 420
aacaataacg accgcgaagt gcgcgattct ttggaactct tggacgaagt ggaagacatc 480
ctgcaaatcc gctgcgcgcc cgttacctgg ccgatcggta tgggcaaaaa cttcaagggc 540
gtgtaccaca tcctgaacga cgaaatctat ctctttgaag cgggcggcga acgcctgccg 600
cacgagttcg acatcatcaa aggcataaac aatcccgaat tggaacaacg ctttccgttg 660
gaaatccagc agttgcgcga cgaaatcgaa ttggtgcagg cggettccaa cgaatttaat 720
ctcgacgaat ttctgcgcgg cgaactcacg ccagtgttct tcggctctgc gattaacaac 780
ttcggcattc aggaaatcct caattcattg attgactggg caccgcgacc gaaaccgcgc 840
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gtgttgcaat ttgaagtcgt aacctcacgc ctgcgcaacg aatacggcgt ggaagccgtg 1380
ttcgacagcg catccatctg gtcggcgcgc tgggtatcgt gcgacgacaa gaaaaaactg 1440
gcggaatttg aaaaagccaa cgcaggcaac ctgcgcatcg acgcaggcgg caacctcgcc 1500
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ttccacgaaa cgcgcgaaca ttcggtcaaa ctctaa 1596

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<210> 512

<211> 531

<212> PRT

<213> Neisseria gonorrhoeae

<400> 512

Met Ser Gln Glu Ile Leu Asp Gln Val Arg Arg Arg Arg Thr Phe Ala
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Ile Ile Ser His Pro Asp Ala Gly Lys Thr Thr Leu Thr Glu Lys Leu
 20 25 30
 Leu Leu Phe Ser Gly Ala Ile Gln Ser Ala Gly Thr Val Lys Gly Lys
 35 40 45
 Lys Thr Gly Lys Phe Ala Thr Ser Asp Trp Met Asp Ile Glu Lys Gln
 50 55 60
 Arg Gly Ile Ser Val Ala Ser Ser Val Met Gln Phe Asp Tyr Lys Asp
 65 70 75 80
 His Thr Val Asn Leu Leu Asp Thr Pro Gly His Gln Asp Phe Ser Glu
 85 90 95
 Asp Thr Tyr Arg Val Leu Thr Ala Val Asp Ser Ala Leu Met Val Ile
 100 105 110
 Asp Ala Ala Lys Gly Val Glu Ala Gln Thr Ile Lys Leu Leu Asn Val
 115 120 125
 Cys Arg Leu Arg Asp Thr Pro Ile Val Thr Phe Met Asn Lys Tyr Asp
 130 135 140
 Arg Glu Val Arg Asp Ser Leu Glu Leu Leu Asp Glu Val Glu Asp Ile
 145 150 155 160
 Leu Gln Ile Arg Cys Ala Pro Val Thr Trp Pro Ile Gly Met Gly Lys
 165 170 175
 Asn Phe Lys Gly Val Tyr His Ile Leu Asn Asp Glu Ile Tyr Leu Phe
 180 185 190
 Glu Ala Gly Gly Glu Arg Leu Pro His Glu Phe Asp Ile Ile Lys Gly
 195 200 205
 Ile Asn Asn Pro Glu Leu Glu Gln Arg Phe Pro Leu Glu Ile Gln Gln
 210 215 220
 Leu Arg Asp Glu Ile Glu Leu Val Gln Ala Ala Ser Asn Glu Phe Asn
 225 230 235 240
 Leu Asp Glu Phe Leu Ala Gly Glu Leu Thr Pro Val Phe Phe Gly Ser
 245 250 255
 Ala Ile Asn Asn Phe Gly Ile Gln Glu Ile Leu Asn Ser Leu Ile Asp
 260 265 270
 Trp Ala Pro Ala Pro Lys Pro Arg Asp Ala Thr Met Arg Met Val Gly
 275 280 285
 Pro Asp Glu Pro Lys Phe Ser Gly Phe Ile Phe Lys Ile Gln Ala Asn
 290 295 300
 Met Asp Pro Lys His Arg Asp Arg Ile Ala Phe Leu Arg Val Cys Ser
 305 310 315 320

Gly Lys Phe Glu Arg Gly Met Lys Met Lys His Leu Arg Ile Asn Arg
 325 330 335
 Glu Ile Ala Ala Ser Ser Val Val Thr Phe Met Ser His Asp Arg Glu
 340 345 350
 Leu Ala Glu Glu Ala Tyr Ala Gly Asp Ile Ile Gly Ile Pro Asn His
 355 360 365
 Gly Asn Ile Gln Ile Gly Asp Ser Phe Ser Glu Gly Glu Gln Leu Ala
 370 375 380
 Phe Thr Gly Ile Pro Phe Phe Ala Pro Glu Leu Phe Arg Ser Val Arg
 385 390 395 400
 Ile Lys Asn Pro Leu Lys Ile Lys Gln Leu Gln Lys Gly Leu Gln Gln
 405 410 415
 Leu Gly Glu Glu Gly Ala Val Gln Val Phe Lys Pro Met Ser Gly Ala
 420 425 430
 Asp Leu Ile Leu Gly Ala Val Gly Val Leu Gln Phe Glu Val Val Thr
 435 440 445
 Ser Arg Leu Ala Asn Glu Tyr Gly Val Glu Ala Val Phe Asp Ser Ala
 450 455 460
 Ser Ile Trp Ser Ala Arg Trp Val Ser Cys Asp Asp Lys Lys Lys Leu
 465 470 475 480
 Ala Glu Phe Glu Lys Ala Asn Ala Gly Asn Leu Ala Ile Asp Ala Gly
 485 490 495
 Gly Asn Leu Ala Tyr Leu Ala Pro Asn Arg Val Asn Leu Gly Leu Thr
 500 505 510
 Gln Glu Arg Trp Pro Asp Ile Val Phe His Glu Thr Arg Glu His Ser
 515 520 525
 Val Lys Leu
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<210> 513

<211> 1596

<212> DNA

<213> Neisseria meningitidis

<400> 513

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 agcgcgggta cggtaaaagg caagaaaacc ggcaaattcg ccaattccga ctggatggaa 180
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 cacaccgtca acctcttgga cagcgcggga caccaagact tctccgaaga cacctaccgc 300
 gttttaaccg ccgtggacag cgcattaatg gtcatcgacg cggcaaaagg cgtggaagcg 360
 caaacatca agctcttaaa cgtctgccgc ctgcgcgata caccgattgt tacgtttatg 420

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aacaaatacg accgcgaagt ggcgcgattcc ctggaacttt tggacgaagt ggaaaacatt 480
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gtgtaccaca tcctgaacga tgaaatttat ctctttgaag ctggcggcga acgcctgccg 600
cacgagttcg acatcatcaa aggcacatgat aatcctgaat tggaacaacg ctttccgttg 660
gaaatccagc agttgcgcga cgaaatcgaa ttggtgcagg cggcttccaa cgagtttaat 720
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gctgaatttg aaaaagccaa cgcgggcaac ctgccatcg acgcaggcgg caacctcgcc 1500
tacctcgccc ccaaccgcgt gaatttggga ctcacgcaag aacgttggcc ggacatcgtg 1560
ttccacgaaa cacgcgaaca ttcggtcaaa ctgtaa 1596

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<210> 514

<211> 531

<212> PRT

<213> *Neisseria meningitidis*

<400> 514

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Ile Ile Ser His Pro Asp Ala Gly Lys Thr Thr Leu Thr Glu Lys Leu
      20             25             30

Leu Leu Phe Ser Gly Ala Ile Gln Ser Ala Gly Thr Val Lys Gly Lys
      35             40             45

Lys Thr Gly Lys Phe Ala Thr Ser Asp Trp Met Glu Ile Glu Lys Gln
      50             55             60

Arg Gly Ile Ser Val Ala Ser Ser Val Met Gln Phe Asp Tyr Lys Asp
      65             70             75             80

His Thr Val Asn Leu Leu Asp Thr Pro Gly His Gln Asp Phe Ser Glu
      85             90             95

Asp Thr Tyr Arg Val Leu Thr Ala Val Asp Ser Ala Leu Met Val Ile
      100            105            110

Asp Ala Ala Lys Gly Val Glu Ala Gln Thr Ile Lys Leu Leu Asn Val
      115            120            125

Cys Arg Leu Arg Asp Thr Pro Ile Val Thr Phe Met Asn Lys Tyr Asp
      130            135            140

Arg Glu Val Arg Asp Ser Leu Glu Leu Leu Asp Glu Val Glu Asn Ile
      145            150            155            160

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Leu Lys Ile Arg Cys Ala Pro Val Thr Trp Pro Ile Gly Met Gly Lys
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 Asn Phe Lys Gly Val Tyr His Ile Leu Asn Asp Glu Ile Tyr Leu Phe
 180 185 190
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 195 200 205
 Ile Asp Asn Pro Glu Leu Glu Gln Arg Phe Pro Leu Glu Ile Gln Gln
 210 215 220
 Leu Arg Asp Glu Ile Glu Leu Val Gln Ala Ala Ser Asn Glu Phe Asn
 225 230 235 240
 Leu Asp Glu Phe Leu Ala Gly Glu Leu Thr Pro Val Phe Phe Gly Ser
 245 250 255
 Ala Ile Asn Asn Phe Gly Ile Gln Glu Ile Leu Asn Ser Leu Ile Asp
 260 265 270
 Trp Ala Pro Ala Pro Lys Pro Arg Asp Ala Thr Val Arg Met Val Glu
 275 280 285
 Pro Asp Glu Pro Lys Phe Ser Gly Phe Ile Phe Lys Ile Gln Ala Asn
 290 295 300
 Met Asp Pro Lys His Arg Asp Arg Ile Ala Phe Leu Arg Val Cys Ser
 305 310 315 320
 Gly Lys Phe Glu Arg Gly Met Lys Met Lys His Leu Arg Ile Asn Arg
 325 330 335
 Glu Ile Ala Ala Ser Ser Val Val Thr Phe Met Ser His Asp Arg Glu
 340 345 350
 Leu Val Glu Glu Ala Tyr Ala Gly Asp Ile Ile Gly Ile Pro Asn His
 355 360 365
 Gly Asn Ile Gln Ile Gly Asp Ser Phe Ser Glu Gly Glu Gln Leu Ala
 370 375 380
 Phe Thr Gly Ile Pro Phe Phe Ala Pro Glu Leu Phe Arg Ser Val Arg
 385 390 395 400
 Ile Lys Asn Pro Leu Lys Ile Lys Gln Leu Gln Lys Gly Leu Gln Gln
 405 410 415
 Leu Gly Glu Glu Gly Ala Val Gln Val Phe Lys Pro Met Ser Gly Ala
 420 425 430
 Asp Leu Ile Leu Gly Ala Val Gly Val Leu Gln Phe Glu Val Val Thr
 435 440 445
 Ser Arg Leu Ala Asn Glu Tyr Gly Val Glu Ala Val Phe Asp Ser Ala

450 455 460
 Ser Ile Trp Ser Ala Arg Trp Val Ser Cys Asp Asp Lys Lys Lys Leu
 465 470 475 480
 Ala Glu Phe Glu Lys Ala Asn Ala Gly Asn Leu Ala Ile Asp Ala Gly
 485 490 495
 Gly Asn Leu Ala Tyr Leu Ala Pro Asn Arg Val Asn Leu Gly Leu Thr
 500 505 510
 Gln Glu Arg Trp Pro Asp Ile Val Phe His Glu Thr Arg Glu His Ser
 515 520 525
 Val Lys Leu
 530

<210> 515
 <211> 1596
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 515
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 agcgcgggta cggtaaaagg caagaaaacc ggcaaattcg ccacctccga ctggatggac 180
 atcgagaagc agcgcggcat ttccgtggca tcaagcgtga tgcagttcga ctataaagac 240
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 caaaccatca aactcttgaa cgtctgccgc ctgcgcaata cgccgattgt tacgttcacg 420
 aacaaatagc accgcgaagt gcgcgattcc ctggaattgc tggacgaagt ggaaaacatc 480
 ctgcaaattc gctgcgcgcc cgtaacctgg ccgatcggca tgggcaaaaa cttcaaaggc 540
 gtgtaccaca tcctgaacga cgaaatctat ctctttgaag cgggcggcga acgcttgccg 600
 cacgagttcg acatcatcaa aggcacgat aatcccgaat tggaacaacg ctttccgtta 660
 gaaatacagc agttgcgcga cgaaatcgaa ttggtgcagg cggcttccaa cgagttcaat 720
 ctgcacgaat tcctgcgcgg cgaactcacg cccgtattct tcggctctgc gattaacaac 780
 ttccggtattc aggaaatcct caattcattg attgaatggg cgcccgcgcc gaaaccacgc 840
 gatgcgaccg tgcgtatggt cgagccggac gagccgaagt tttccggatt tatcttcaaa 900
 atccaagcca atatggaccc gaaacaccgc gaccgtattg ctttcttgcg cgtctgctcc 960
 ggcaaattcg agcgcggcat gaaaatgaaa cacctgcgta tcaaccgcga aatcgccgcc 1020
 tccagcgtgg taaccttcac gtcccacgac cgcgagctgg ttgaagaagc ctacgccggc 1080
 gacattatcg gtatcccaaa ccacggcaac atccaaatcg gcgacagctt ctccgaaggc 1140
 gaacaactga cgttttaccg catcccattc ttgcgcgccg aactgttccg cagcgttcgc 1200
 atcaaaaacc cgctgaaaat caagcaactg caaaaagggt tgcaacagct tggcgaagaa 1260
 ggtgcggtgc aggtgttcaa accaatgagc ggccgcggatt tgattttggg cgcggtcggc 1320
 gtgttgacgt ttgaagtcgt tacctcgcgc cttgccaacg aatacggcgt ggaagccgtg 1380
 ttcgacaacg catccatctg gtcggcgcgc tgggtatcgt gcgacgacaa gaaaaaactg 1440
 gcggaatttg aaaaagccaa cgcgggcaac ctgcgccatc acgcgggcgg caacctcgcc 1500
 tacctcggcc ctaaccgcgt gaatctggga ctacgcaag aacgctggcc ggacatcggt 1560
 ttccacgaaa cgcgcgagca ttcggtcaaa ctttaa 1596

<210> 516
 <211> 531
 <212> PRT
 <213> *Neisseria meningitidis*

<400> 516

Met	Ser	Gln	Glu	Ile	Leu	Asp	Gln	Val	Arg	Arg	Arg	Arg	Thr	Phe	Ala
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Ile	Ile	Ser	His	Pro	Asp	Ala	Gly	Lys	Thr	Thr	Leu	Thr	Glu	Lys	Leu
			20					25					30		
Leu	Leu	Phe	Ser	Gly	Ala	Ile	Gln	Ser	Ala	Gly	Thr	Val	Lys	Gly	Lys
			35					40						45	
Lys	Thr	Gly	Lys	Phe	Ala	Thr	Ser	Asp	Trp	Met	Asp	Ile	Glu	Lys	Gln
	50					55					60				
Arg	Gly	Ile	Ser	Val	Ala	Ser	Ser	Val	Met	Gln	Phe	Asp	Tyr	Lys	Asp
65					70					75					80
His	Thr	Val	Asn	Leu	Leu	Asp	Thr	Pro	Gly	His	Gln	Asp	Phe	Ser	Glu
			85						90					95	
Asp	Thr	Tyr	Arg	Val	Leu	Thr	Ala	Val	Asp	Ser	Ala	Leu	Met	Val	Ile
			100					105					110		
Asp	Ala	Ala	Lys	Gly	Val	Glu	Ala	Gln	Thr	Ile	Lys	Leu	Leu	Asn	Val
		115					120					125			
Cys	Arg	Leu	Arg	Asn	Thr	Pro	Ile	Val	Thr	Phe	Met	Asn	Lys	Tyr	Asp
		130				135					140				
Arg	Glu	Val	Arg	Asp	Ser	Leu	Glu	Leu	Leu	Asp	Glu	Val	Glu	Asn	Ile
145					150					155					160
Leu	Gln	Ile	Arg	Cys	Ala	Pro	Val	Thr	Trp	Pro	Ile	Gly	Met	Gly	Lys
				165					170					175	
Asn	Phe	Lys	Gly	Val	Tyr	His	Ile	Leu	Asn	Asp	Glu	Ile	Tyr	Leu	Phe
			180					185					190		
Glu	Ala	Gly	Gly	Glu	Arg	Leu	Pro	His	Glu	Phe	Asp	Ile	Ile	Lys	Gly
		195					200					205			
Ile	Asp	Asn	Pro	Glu	Leu	Glu	Gln	Arg	Phe	Pro	Leu	Glu	Ile	Gln	Gln
	210					215					220				
Leu	Arg	Asp	Glu	Ile	Glu	Leu	Val	Gln	Ala	Ala	Ser	Asn	Glu	Phe	Asn
225					230					235					240
Leu	Asp	Glu	Phe	Leu	Ala	Gly	Glu	Leu	Thr	Pro	Val	Phe	Phe	Gly	Ser
				245					250					255	
Ala	Ile	Asn	Asn	Phe	Gly	Ile	Gln	Glu	Ile	Leu	Asn	Ser	Leu	Ile	Glu
			260					265					270		
Trp	Ala	Pro	Ala	Pro	Lys	Pro	Arg	Asp	Ala	Thr	Val	Arg	Met	Val	Glu
		275					280						285		

Pro Asp Glu Pro Lys Phe Ser Gly Phe Ile Phe Lys Ile Gln Ala Asn
 290 295 300
 Met Asp Pro Lys His Arg Asp Arg Ile Ala Phe Leu Arg Val Cys Ser
 305 310 315 320
 Gly Lys Phe Glu Arg Gly Met Lys Met Lys His Leu Arg Ile Asn Arg
 325 330 335
 Glu Ile Ala Ala Ser Ser Val Val Thr Phe Met Ser His Asp Arg Glu
 340 345 350
 Leu Val Glu Glu Ala Tyr Ala Gly Asp Ile Ile Gly Ile Pro Asn His
 355 360 365
 Gly Asn Ile Gln Ile Gly Asp Ser Phe Ser Glu Gly Glu Gln Leu Thr
 370 375 380
 Phe Thr Gly Ile Pro Phe Phe Ala Pro Glu Leu Phe Arg Ser Val Arg
 385 390 395 400
 Ile Lys Asn Pro Leu Lys Ile Lys Gln Leu Gln Lys Gly Leu Gln Gln
 405 410 415
 Leu Gly Glu Glu Gly Ala Val Gln Val Phe Lys Pro Met Ser Gly Ala
 420 425 430
 Asp Leu Ile Leu Gly Ala Val Gly Val Leu Gln Phe Glu Val Val Thr
 435 440 445
 Ser Arg Leu Ala Asn Glu Tyr Gly Val Glu Ala Val Phe Asp Asn Ala
 450 455 460
 Ser Ile Trp Ser Ala Arg Trp Val Ser Cys Asp Asp Lys Lys Lys Leu
 465 470 475 480
 Ala Glu Phe Glu Lys Ala Asn Ala Gly Asn Leu Ala Ile Asp Ala Gly
 485 490 495
 Gly Asn Leu Ala Tyr Leu Ala Pro Asn Arg Val Asn Leu Gly Leu Thr
 500 505 510
 Gln Glu Arg Trp Pro Asp Ile Val Phe His Glu Thr Arg Glu His Ser
 515 520 525
 Val Lys Leu
 530

<210> 517

<211> 888

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 517

atgaaatata aaagaatcgt atttaaagtc ggcacatctt cgattaccgc ttcggacggc 60
 agcctctcgc gcggcaaaat ccaaaccatc acccgccagc ttgccgcatt gcatcatgcg 120

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ggacacgagc tgggtcttgggt gtcttccggc gcggttgctg caggggttcgg cgcgctgggt 180
ttcaaaaaac gtccgggtcaa aatcgccgac aaacaggctt ccgccgccgt cgggcagggg 240
ctgctgatgg aagaatatac ggcaaacctg tcttcagacg gcatcgtgtc cgcacaaatc 300
ctgctcagcc gtgccgactt tgccgacaaa cgccgctacc aaaatgccgg cggcgcaactt 360
tccgtgctgc tgcaacgccg cgcgattccc atcatcaatg aaaacgacac ggtttcgggt 420
gaggagttga aaatcggcga caacgacaca ttgagtgcgc aagtggcggc gatgatacag 480
gcagacctct tgggtgctgct gaccgacata gacggtcttt acaccggcaa cccgaacagc 540
aatcccgatg ccgtacggct ggacaaaatc gaacacatca accatgaaat catcgaaatg 600
gcgggcggct cgggttcggc aaacggcacg ggcggtatgc tgacccaaat caaagcggca 660
accatcgccg ccgaatccgg cgtaccgggtg tatatctgtt cctcactcaa acccgattca 720
ttggccgaag ccgccgaaca tcaggcggac ggctcgtttt tcgtcccccg tgccaaaggt 780
ttcgggacac agaagcaatg gctggcggtt tattccgaaa gcgggggcag cgtttatgtg 840
gacgaaagtg cggaacacgc tttgtccgaa caagggaaag cctgctga 888

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<210> 518

<211> 295

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 518

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Met Lys Tyr Lys Arg Ile Val Phe Lys Val Gly Thr Ser Ser Ile Thr
  1                      5                      10                      15

Arg Ser Asp Gly Ser Leu Ser Arg Gly Lys Ile Gln Thr Ile Thr Arg
          20                      25                      30

Gln Leu Ala Ala Leu His His Ala Gly His Glu Leu Val Leu Val Ser
  35                      40                      45

Ser Gly Ala Val Ala Ala Gly Phe Gly Ala Leu Gly Phe Lys Lys Arg
  50                      55                      60

Pro Val Lys Ile Ala Asp Lys Gln Ala Ser Ala Val Gly Gln Gly
  65                      70                      75                      80

Leu Leu Met Glu Glu Tyr Thr Ala Asn Leu Ser Ser Asp Gly Ile Val
          85                      90                      95

Ser Ala Gln Ile Leu Leu Ser Arg Ala Asp Phe Ala Asp Lys Arg Arg
 100                      105                      110

Tyr Gln Asn Ala Gly Gly Ala Leu Ser Val Leu Leu Gln Arg Arg Ala
 115                      120                      125

Ile Pro Ile Ile Asn Glu Asn Asp Thr Val Ser Val Glu Glu Leu Lys
 130                      135                      140

Ile Gly Asp Asn Asp Thr Leu Ser Ala Gln Val Ala Ala Met Ile Gln
 145                      150                      155                      160

Ala Asp Leu Leu Val Leu Leu Thr Asp Ile Asp Gly Leu Tyr Thr Gly
          165                      170                      175

Asn Pro Asn Ser Asn Pro Asp Ala Val Arg Leu Asp Lys Ile Glu His
          180                      185                      190

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Ile Asn His Glu Ile Ile Glu Met Ala Gly Gly Ser Gly Ser Ala Asn
 195 200 205
 Gly Thr Gly Gly Met Leu Thr Lys Ile Lys Ala Ala Thr Ile Ala Ala
 210 215 220
 Glu Ser Gly Val Pro Val Tyr Ile Cys Ser Ser Leu Lys Pro Asp Ser
 225 230 235 240
 Leu Ala Glu Ala Ala Glu His Gln Ala Asp Gly Ser Phe Phe Val Pro
 245 250 255
 Arg Ala Lys Gly Leu Arg Thr Gln Lys Gln Trp Leu Ala Phe Tyr Ser
 260 265 270
 Glu Ser Gly Gly Ser Val Tyr Val Asp Glu Ser Ala Glu His Ala Leu
 275 280 285
 Ser Glu Gln Gly Lys Ala Cys
 290 295

<210> 519
 <211> 1110
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 519
 atgaaatata aaagaatcgt atttaaagtc ggcacatctt cgattaccca ttccggacggc 60
 agtctctcgc gcggcaaaat ccaaaccatc acctgccagc ttgccgcatt gcatcatgcg 120
 ggacacgagc tggctctggt gtcttccggc gcggttgccg cagggttcgg tgcgctgggt 180
 ttcaaaaaac gtccggtcaa aatcgccgac aaacaggctt ccgccgccgt cgggcagggg 240
 ctgctgatgg aagaatatac ggcaaacctg tcttcagacg gcatcgtgtc cgcgcaaatc 300
 ctgctcagcc gcgccgactt tgccgacaaa cgccgctacc aaaatgccgg cggcgcaactt 360
 tccgtgctgc tgcaacgccg gcgccgtccc atcatcaatg aaaacgatac ggtttcgggt 420
 gaggaattga aaatcggcga caacgacaca ttgagtgcgc aagtggcggc gatgatacag 480
 gcagacctct tgggtgctgt gaccgacata gacgggtctt acacgggcaa cccgaacagc 540
 aatcccgatg ccgtacggct ggacaaaatc gaacacatca accatgaaat catcgaaatg 600
 gcgggcggct cgggttcggc aaacggcacg ggcgggtatg tgacaaaaat caaagcggca 660
 accatcgccg ccgaatccgg cgtaccgggt tatatctgtt cctcgtcaa acccgatgca 720
 cttgccgaag ctgccgaaca tcaggcggac ggctcgtttt tcgtcccccg tgccaaaggt 780
 ttgcggacgc agaagcaatg gctggcggtc tattccgaaa gccggggcag cgtttatgtg 840
 gacgaagggt cggaacacgc tttgtccgaa caggggaaaa gcctgctgat gtcgggcatt 900
 gccggaatcg aagggcattt ttcccgtatg gacaccgtaa ccgtgtacag caaggcaacc 960
 aaacagcccc tgggcaaagg gcgcgtcctg ttccggtctg ccgccgccga agacctgctc 1020
 aaatcgcgta aggcgaaaagg cgtgttcata catcgggacg actggatttc catcacgccc 1080
 gaaatacgcc tgcttctgac cgaattttag 1110

<210> 520
 <211> 369
 <212> PRT
 <213> *Neisseria meningitidis*

<400> 520
 Met Lys Tyr Lys Arg Ile Val Phe Lys Val Gly Thr Ser Ser Ile Thr

1	5	10	15
His Ser Asp Gly Ser Leu Ser Arg Gly Lys Ile Gln Thr Ile Thr Cys	20	25	30
Gln Leu Ala Ala Leu His His Ala Gly His Glu Leu Val Leu Val Ser	35	40	45
Ser Gly Ala Val Ala Ala Gly Phe Gly Ala Leu Gly Phe Lys Lys Arg	50	55	60
Pro Val Lys Ile Ala Asp Lys Gln Ala Ser Ala Ala Val Gly Gln Gly	65	70	75
Leu Leu Met Glu Glu Tyr Thr Ala Asn Leu Ser Ser Asp Gly Ile Val	85	90	95
Ser Ala Gln Ile Leu Leu Ser Arg Ala Asp Phe Ala Asp Lys Arg Arg	100	105	110
Tyr Gln Asn Ala Gly Gly Ala Leu Ser Val Leu Leu Gln Arg Arg Ala	115	120	125
Val Pro Ile Ile Asn Glu Asn Asp Thr Val Ser Val Glu Glu Leu Lys	130	135	140
Ile Gly Asp Asn Asp Thr Leu Ser Ala Gln Val Ala Ala Met Ile Gln	145	150	155
Ala Asp Leu Leu Val Leu Leu Thr Asp Ile Asp Gly Leu Tyr Thr Gly	165	170	175
Asn Pro Asn Ser Asn Pro Asp Ala Val Arg Leu Asp Lys Ile Glu His	180	185	190
Ile Asn His Glu Ile Ile Glu Met Ala Gly Gly Ser Gly Ser Ala Asn	195	200	205
Gly Thr Gly Gly Met Leu Thr Lys Ile Lys Ala Ala Thr Ile Ala Ala	210	215	220
Glu Ser Gly Val Pro Val Tyr Ile Cys Ser Ser Leu Lys Pro Asp Ala	225	230	235
Leu Ala Glu Ala Ala Glu His Gln Ala Asp Gly Ser Phe Phe Val Pro	245	250	255
Arg Ala Lys Gly Leu Arg Thr Gln Lys Gln Trp Leu Ala Phe Tyr Ser	260	265	270
Glu Ser Arg Gly Ser Val Tyr Val Asp Glu Gly Ala Glu His Ala Leu	275	280	285
Ser Glu Gln Gly Lys Ser Leu Leu Met Ser Gly Ile Ala Gly Ile Glu	290	295	300
Gly His Phe Ser Arg Met Asp Thr Val Thr Val Tyr Ser Lys Ala Thr			

305 310 315 320
 Lys Gln Pro Leu Gly Lys Gly Arg Val Leu Phe Gly Ser Ala Ala Ala
 325 330 335
 Glu Asp Leu Leu Lys Ser Arg Lys Ala Lys Gly Val Phe Ile His Arg
 340 345 350
 Asp Asp Trp Ile Ser Ile Thr Pro Glu Ile Arg Leu Leu Leu Thr Glu
 355 360 365

Phe

<210> 521
 <211> 1110
 <212> DNA
 <213> Neisseria meningitidis

<400> 521
 atgaaataca aaagaatcgt atttaaagtc ggcacatctt cgattaccca ttcggacggc 60
 agtctctcgc gcggcaaaat ccaaaccatc acccgccagc ttgccgcatt gcatcatgcg 120
 ggacacgagc tgggtcttgggt gtcttccggc gcggttgcg cagggttcgg tgcgctgggt 180
 ttcaaaaaac gtccgggtcaa aatcgccgac aaacaggctt ccgccgccgt cgggcagggg 240
 ctgctgatgg aagaatatac ggcaaacctg tcttcagacg gcatcgtgtc cgcacaaatc 300
 ctgctcagcc gcgccgactt tgccgacaaa cgccgctacc aaaatgccgg cggcgcaactt 360
 tccgtgctgc tgcaacgcgc cgccgtcccc atcatcaatg aaaacgatac ggtttcggtt 420
 gaggaattga aaatcggcga caacgacaca ttgagtgcgc aagtggcggc gatgatacag 480
 gcagacctct tgggtgctgct gaccgacata gacggtcttt acaccggcaa cccgaacagc 540
 aatcccgatg ccgtacggct ggacaaaatc gaacacatca accatgaaat catcgaaatg 600
 gcggggcggct cgggttcggc aaacggcaca ggcggtatgc tgactaaaat caaagcggcg 660
 acgattgcga ccgagtccgg cgtaccggtc tatactgtt cctcgtcaa acccgatgca 720
 cttgccgaag cggcagataa tcaggcggac ggctcgtttt tcgtcccccg tgccaaaggt 780
 ttgcggacgc agaagcaatg gctggcgctt tattccgaaa gcaggggcgg cgtttatgtg 840
 gacgaaggtg cggaacacgc tttgtccgaa cagggaaaaa gcctgctgat gtcgggcatt 900
 gccggaatcg aagggcattt ttcccgtatg gacaccgtaa ccgtgtacag caaggcaacc 960
 aaacagcctt tgggcaaagg gcgagtcctg ttccggtctg ccgccgccga agacctgctc 1020
 aaattgcgta aggcgaaagg cgtgttcacg catcgggacg actggatttc catcacgcc 1080
 gaaatacgcc tgcttctgac cgaattttag 1110

<210> 522
 <211> 369
 <212> PRT
 <213> Neisseria meningitidis

<400> 522
 Met Lys Tyr Lys Arg Ile Val Phe Lys Val Gly Thr Ser Ser Ile Thr
 1 5 10 15
 His Ser Asp Gly Ser Leu Ser Arg Gly Lys Ile Gln Thr Ile Thr Arg
 20 25 30
 Gln Leu Ala Ala Leu His His Ala Gly His Glu Leu Val Leu Val Ser
 35 40 45

Ser Gly Ala Val Ala Ala Gly Phe Gly Ala Leu Gly Phe Lys Lys Arg
 50 55 60
 Pro Val Lys Ile Ala Asp Lys Gln Ala Ser Ala Ala Val Gly Gln Gly
 65 70 75 80
 Leu Leu Met Glu Glu Tyr Thr Ala Asn Leu Ser Ser Asp Gly Ile Val
 85 90 95
 Ser Ala Gln Ile Leu Leu Ser Arg Ala Asp Phe Ala Asp Lys Arg Arg
 100 105 110
 Tyr Gln Asn Ala Gly Gly Ala Leu Ser Val Leu Leu Gln Arg Arg Ala
 115 120 125
 Val Pro Ile Ile Asn Glu Asn Asp Thr Val Ser Val Glu Glu Leu Lys
 130 135 140
 Ile Gly Asp Asn Asp Thr Leu Ser Ala Gln Val Ala Ala Met Ile Gln
 145 150 155 160
 Ala Asp Leu Leu Val Leu Leu Thr Asp Ile Asp Gly Leu Tyr Thr Gly
 165 170 175
 Asn Pro Asn Ser Asn Pro Asp Ala Val Arg Leu Asp Lys Ile Glu His
 180 185 190
 Ile Asn His Glu Ile Ile Glu Met Ala Gly Gly Ser Gly Ser Ala Asn
 195 200 205
 Gly Thr Gly Gly Met Leu Thr Lys Ile Lys Ala Ala Thr Ile Ala Thr
 210 215 220
 Glu Ser Gly Val Pro Val Tyr Ile Cys Ser Ser Leu Lys Pro Asp Ala
 225 230 235 240
 Leu Ala Glu Ala Ala Asp Asn Gln Ala Asp Gly Ser Phe Phe Val Pro
 245 250 255
 Arg Ala Lys Gly Leu Arg Thr Gln Lys Gln Trp Leu Ala Phe Tyr Ser
 260 265 270
 Glu Ser Arg Gly Gly Val Tyr Val Asp Glu Gly Ala Glu His Ala Leu
 275 280 285
 Ser Glu Gln Gly Lys Ser Leu Leu Met Ser Gly Ile Ala Gly Ile Glu
 290 295 300
 Gly His Phe Ser Arg Met Asp Thr Val Thr Val Tyr Ser Lys Ala Thr
 305 310 315 320
 Lys Gln Pro Leu Gly Lys Gly Arg Val Leu Phe Gly Ser Ala Ala Ala
 325 330 335
 Glu Asp Leu Leu Lys Leu Arg Lys Ala Lys Gly Val Phe Ile His Arg
 340 345 350

Asp Asp Trp Ile Ser Ile Thr Pro Glu Ile Arg Leu Leu Leu Thr Glu
 355 360 365

Phe

<210> 523
 <211> 672
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 523
 atggaatcc ggtttcagac agcattttta cgtttggttc agatgaaaac aaacgcttca 60
 attcttaccg caacacgcct tgtatttcct gccgctgccg cacggacagg gatcggttcct 120
 gccggttttt tccccttccc tgcggacggg ttgcggtttg ttgatgaccg cctgccagta 180
 gcggtagatg tctgccagcg cgtaaggcag ttcggacgca agttccgccg gctcgccctc 240
 ggtgaattgc aggcggataa cgccgttttc ctcttcgctg taaatgccgc ccaactgccat 300
 cacggggtaa aacagctctt caaacgcttc atcatcggcg gcttcaaacc aatcggtcgg 360
 cacaatgtcc aaaccgtaaa gataggcggt gcaccaagtg taaaaatcgc tgccgccctc 420
 gccgtcgtcg tagagccaca aatcgggcag ctttttatcc gacatcgcg cggttggttc 480
 catcgccatt gccaaaacca gccgttcgat ttcggaacgt tcggcggcgg taaattgcga 540
 ttcgtcgccc aacacttcgg gcagccagtc gagcgtgcc aatttgctcg gcccgctcaa 600
 cagcgccgtc ataaaacctt gaacctcgtc gcaacgcac gtgttgccct gttcgctttt 660
 ggcaccaat aa 672

<210> 524
 <211> 223
 <212> PRT
 <213> Neisseria gonorrhoeae

<400> 524
 Met Glu Ile Arg Phe Gln Thr Ala Phe Leu Arg Leu Val Gln Met Lys
 1 5 10 15
 Thr Asn Ala Ser Ile Leu Thr Ala Thr Arg Leu Val Phe Pro Ala Ala
 20 25 30
 Ala Ala Arg Thr Gly Ile Val Pro Ala Gly Phe Phe Pro Phe Pro Ala
 35 40 45
 Asp Gly Leu Arg Phe Val Asp Asp Arg Leu Pro Val Ala Val Asp Val
 50 55 60
 Cys Gln Arg Val Arg Gln Phe Gly Arg Lys Phe Arg Gln Leu Ala Phe
 65 70 75 80
 Gly Glu Leu Gln Ala Asp Asn Ala Val Phe Leu Phe Val Val Asn Ala
 85 90 95
 Ala His Cys His His Gly Val Lys Gln Leu Phe Lys Arg Phe Ile Ile
 100 105 110
 Gly Gly Phe Lys Pro Ile Gly Arg His Asn Val Gln Thr Val Lys Ile
 115 120 125

Gly Val Ala Pro Ser Val Lys Ile Ala Ala Ala Leu Ala Val Val Val
 130 135 140
 Glu Pro Gln Ile Gly Gln Leu Phe Ile Arg His Arg Gly Gly Cys Phe
 145 150 155 160
 His Arg His Cys Gln Asn Gln Pro Phe Asp Phe Gly Thr Phe Gly Gly
 165 170 175
 Gly Lys Leu Arg Phe Val Ala Gln His Phe Gly Gln Pro Val Glu Arg
 180 185 190
 Cys Gln Phe Val Arg Pro Ala Gln Gln Arg Arg His Lys Thr Leu Asn
 195 200 205
 Leu Val Ala Thr His Arg Val Ala Leu Phe Ala Phe Gly Ile Gln
 210 215 220

<210> 525
 <211> 732
 <212> DNA
 <213> Neisseria meningitidis

<400> 525
 atggaacaa acgcttcaat tcttaccgca acacgccttg tattttctgc cgctgccgca 60
 cggacaggga tcgttccctgc ctgttttttc gccttccctg cggacgggtt gcggtttgtt 120
 gatgactgcc tgccagtagc ggtagatata cgccaatgca taaggcaact cggattccag 180
 ttccgcccagc tcgccttctg tgaattgcag acggatagcg ccgttttcct cttcgtcgta 240
 aataccgccc aatgccatga tgggataaaa caactcttca aacgcttcat catcgacggc 300
 ttcaaaccacaa tcggtcggca caatatccaa accgtaaaga taagcattgc accatgtgta 360
 aaaatcgctg ccgcgcgtctt cgttttcata cagccacaaa tcgggcagtt ttttatccga 420
 catcgccggc gttgtttcca tcgccattgc caaaaccagc cgttcgattt cggaacgttc 480
 ggccggcgta aattgcgatt cgtcgcccaa cacttcgggc agccagtcga gcggtgtcaa 540
 tttgtccggc ccgctcaaca gcgcgcgtcat aaaaccttga acctcgtcgc aacgcacgt 600
 gttgccttgt tcgcttttgg catccaacaa ttcgctcaac cgccgtttgg atgcttcggt 660
 aaattttcgg gaatccatca ttttcctttt caaatgggtt ttgcgcctta ttatcgccgc 720
 aatgccgtct ga 732

<210> 526
 <211> 243
 <212> PRT
 <213> Neisseria meningitidis

<400> 526
 Met Glu Thr Asn Ala Ser Ile Leu Thr Ala Thr Arg Leu Val Phe Ser
 1 5 10 15
 Ala Ala Ala Ala Arg Thr Gly Ile Val Pro Ala Cys Phe Phe Ala Phe
 20 25 30
 Pro Ala Asp Gly Leu Arg Phe Val Asp Asp Cys Leu Pro Val Ala Val
 35 40 45
 Asp Ile Arg Gln Cys Ile Arg Gln Leu Gly Phe Gln Phe Arg Gln Leu
 50 55 60

Ala Phe Cys Glu Leu Gln Thr Asp Ser Ala Val Phe Leu Phe Val Val
 65 70 75 80
 Asn Thr Ala Gln Cys His Asp Gly Ile Lys Gln Leu Phe Lys Arg Phe
 85 90 95
 Ile Ile Asp Gly Phe Lys Pro Ile Gly Arg His Asn Ile Gln Thr Val
 100 105 110
 Lys Ile Ser Ile Ala Pro Cys Val Lys Ile Ala Ala Ala Val Phe Val
 115 120 125
 Phe Ile Gln Pro Gln Ile Gly Gln Phe Phe Ile Arg His Arg Gly Gly
 130 135 140
 Cys Phe His Arg His Cys Gln Asn Gln Pro Phe Asp Phe Gly Thr Phe
 145 150 155 160
 Gly Gly Gly Lys Leu Arg Phe Val Ala Gln His Phe Gly Gln Pro Val
 165 170 175
 Glu Arg Cys Gln Phe Val Arg Pro Ala Gln Gln Arg Arg His Lys Thr
 180 185 190
 Leu Asn Leu Val Ala Thr His Arg Val Ala Leu Phe Ala Phe Gly Ile
 195 200 205
 Gln Gln Phe Ala Gln Pro Pro Phe Gly Cys Phe Gly Lys Phe Ser Gly
 210 215 220
 Ile His His Phe Pro Phe Gln Met Gly Phe Ala Pro Tyr Tyr Arg Arg
 225 230 235 240
 Asn Ala Val

<210> 527
 <211> 837
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 527
 atggaacaaa acgcttcaat tcttaccgca acacgccttg tattttctgc cgctgccgca 60
 cggacagga tcgttcctgc ctgttttttc gccttccctg cggacggttt gcggcttggt 120
 gatgaccgcc tgccagtagc ggtagatata cgccaatgca taaggcaact cggattccag 180
 ttccgccagc tcgccttctg tgaattgcag acggatagtg ccgttgtcct cttcgtcgta 240
 aataccgccc aatgccatga tgggataaaa caactcttca aacgcttcat catcgacggc 300
 ttcaaaccaa tcggtcggca caatatccaa accgtaaaga taagcattgc accatgtgta 360
 aaaatcgctg ccgcgcgtctt cgttttcata cagccacaaa tcgggcagtt ttttatccga 420
 catcgcggcg gttgtttcca tcgccattgc caaaaccagc cgttcgattt cggaacgttc 480
 ggcggcggta aattgcgatt cgtcgcccaa cacttcgggc agccagtcga gcggtgtcaa 540
 tttgtccggc ccgctcaaca gcgcgcgtcat aaaaccttga acctcgtcgc aacgcacgt 600
 gttgccttgt tcgcttttgg catccaacaa ttcgctcaac cgccgtttgg atgcttcggt 660
 aaattttcgg gaatccatca ttttcctttt ccaatgggtt ttgcgcctta ttatagtgga 720
 ttaaatttaa atcaggacaa ggcgacgaag ccgcagacag tacaaatagt acggcaaggc 780

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<210> 528

<211> 278

<212> PRT

<213> Neisseria meningitidis

<400> 528

Met	Glu	Thr	Asn	Ala	Ser	Ile	Leu	Thr	Ala	Thr	Arg	Leu	Val	Phe	Ser
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Ala	Ala	Ala	Ala	Arg	Thr	Gly	Ile	Val	Pro	Ala	Cys	Phe	Phe	Ala	Phe
			20					25					30		
Pro	Ala	Asp	Gly	Leu	Arg	Leu	Val	Asp	Asp	Arg	Leu	Pro	Val	Ala	Val
		35					40					45			
Asp	Ile	Arg	Gln	Cys	Ile	Arg	Gln	Leu	Gly	Phe	Gln	Phe	Arg	Gln	Leu
	50					55					60				
Ala	Phe	Cys	Glu	Leu	Gln	Thr	Asp	Ser	Ala	Val	Val	Leu	Phe	Val	Val
65					70					75					80
Asn	Thr	Ala	Gln	Cys	His	Asp	Gly	Ile	Lys	Gln	Leu	Phe	Lys	Arg	Phe
				85					90					95	
Ile	Ile	Asp	Gly	Phe	Lys	Pro	Ile	Gly	Arg	His	Asn	Ile	Gln	Thr	Val
			100					105					110		
Lys	Ile	Ser	Ile	Ala	Pro	Cys	Val	Lys	Ile	Ala	Ala	Ala	Val	Phe	Val
		115					120					125			
Phe	Ile	Gln	Pro	Gln	Ile	Gly	Gln	Phe	Phe	Ile	Arg	His	Arg	Gly	Gly
	130					135					140				
Cys	Phe	His	Arg	His	Cys	Gln	Asn	Gln	Pro	Phe	Asp	Phe	Gly	Thr	Phe
145					150					155					160
Gly	Gly	Gly	Lys	Leu	Arg	Phe	Val	Ala	Gln	His	Phe	Gly	Gln	Pro	Val
				165					170					175	
Glu	Arg	Cys	Gln	Phe	Val	Arg	Pro	Ala	Gln	Gln	Arg	Arg	His	Lys	Thr
			180					185					190		
Leu	Asn	Leu	Val	Ala	Thr	His	Arg	Val	Ala	Leu	Phe	Ala	Phe	Gly	Ile
		195					200					205			
Gln	Gln	Phe	Ala	Gln	Pro	Pro	Phe	Gly	Cys	Phe	Gly	Lys	Phe	Ser	Gly
	210					215					220				
Ile	His	His	Phe	Pro	Phe	Pro	Met	Gly	Phe	Ala	Pro	Tyr	Tyr	Ser	Gly
225					230					235					240
Leu	Asn	Leu	Asn	Gln	Asp	Lys	Ala	Thr	Lys	Pro	Gln	Thr	Val	Gln	Ile
				245					250					255	

Val Arg Gln Gly Glu Ala Thr Pro Tyr Trp Phe Lys Phe Asn Pro Leu
260 265 270

Tyr Arg Arg Asn Ala Val
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<210> 529
<211> 852
<212> DNA
<213> Neisseria gonorrhoeae

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atcgcgcaag gcttgccgt ttttacaaa gaatcgctcg acgacttcct gacatggggc 180
attttgggcg tgattttggg cggacgcttg ggctatgtcc tgttttacaa attctccgac 240
tacctcgccc atccgcttga tttttcaag gtatgggaag gcggaatgtc gttccacggc 300
ggctttttgg gtgtagttat tgccatatgg ttgttcagcc gcaagcacgg catcggcttc 360
ctcaaaactga tggacacggt cgcgcgcgtc gttccgctgg gtctcgcttc gggacgtatc 420
ggcaacttta tcaacggcga actttgggga cgcattaccg acattaacgc attttgggca 480
atgggcttcc cgcaagcgca ttacgaagat gccgaagccg ccgcgcacaa tccgctttgg 540
gcagaatggc tgcaacaata cggatgtctg ccgcgtcatc cctcgcagct ttatcagttt 600
gcccttgaag gcatctgcct gttcgccgtc gtttgctgtg tttccaaaaa accgcgcccg 660
accgggcaga ctgccgcgt ttttctcggc ggctacggcg tggtccgctt tattgccgaa 720
tttgcgcgcc aaccgcagca ctatctcggg ctgctgacct tggggctgtc gatggggcaa 780
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aacagcact ga 852

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<211> 283
<212> PRT
<213> Neisseria gonorrhoeae

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Phe Thr Phe Leu Gly Arg Arg Arg Ile Ala Gln Gly Leu Ser Val Phe
35 40 45
Thr Lys Glu Ser Leu Asp Asp Phe Leu Thr Trp Gly Ile Leu Gly Val
50 55 60
Ile Leu Gly Gly Arg Leu Gly Tyr Val Leu Phe Tyr Lys Phe Ser Asp
65 70 75 80
Tyr Leu Ala His Pro Leu Asp Ile Phe Lys Val Trp Glu Gly Gly Met
85 90 95
Ser Phe His Gly Gly Phe Leu Gly Val Ile Ala Ile Trp Leu Phe
100 105 110

Ser Arg Lys His Gly Ile Gly Phe Leu Lys Leu Met Asp Thr Val Ala
 115 120 125
 Pro Leu Val Pro Leu Gly Leu Ala Ser Gly Arg Ile Gly Asn Phe Ile
 130 135 140
 Asn Gly Glu Leu Trp Gly Arg Ile Thr Asp Ile Asn Ala Phe Trp Ala
 145 150 155 160
 Met Gly Phe Pro Gln Ala His Tyr Glu Asp Ala Glu Ala Ala Ala His
 165 170 175
 Asn Pro Leu Trp Ala Glu Trp Leu Gln Gln Tyr Gly Met Leu Pro Arg
 180 185 190
 His Pro Ser Gln Leu Tyr Gln Phe Ala Leu Glu Gly Ile Cys Leu Phe
 195 200 205
 Ala Val Val Trp Leu Phe Ser Lys Lys Pro Arg Pro Thr Gly Gln Thr
 210 215 220
 Ala Ala Leu Phe Leu Gly Gly Tyr Gly Val Phe Arg Phe Ile Ala Glu
 225 230 235 240
 Phe Ala Arg Gln Pro Asp Asp Tyr Leu Gly Leu Leu Thr Leu Gly Leu
 245 250 255
 Ser Met Gly Gln Trp Leu Ser Val Pro Met Ile Val Leu Gly Ile Val
 260 265 270
 Gly Phe Val Arg Phe Gly Met Lys Lys Gln His
 275 280

<210> 531
 <211> 852
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 531
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 atcgcgcaag gcttgctcgt ttttaccaaa gaatcgctcg acgaattcct gacatggggc 180
 attttgggcg taattttggg cgggcgtttg gggtacgtcc tgttttacia gttttccgac 240
 tacctcgccc atccgcttga tattttcaag gtatgggaag gcggaatgtc gttccacggc 300
 ggcttttttg gtgtagttat tgccatacgg ttgttcggcc gcaaacacgg catcggcttc 360
 ctcaaactga tggatacggc cgcaccgctc gttccgctgg gtctcgcttc gggacgtatc 420
 ggcaacttca tcaacggcga actttgggga cgcgttaccg acatcaacgc attttgggca 480
 atgggcttcc cgcaggcgcg ttacgaagat gccgaagccg ccgcgcacaa tccgcttttg 540
 gcagaatggc tgcaacaata cggtagctg ccgcgtcatc cctcgagct ttatcagttt 600
 gcacttgaag gcatctgcct gttcacgctc atttggtgt tctctaaaaa acagcggctc 660
 accggacaag tcgcctcgct cttcctcggc ggctacggca tattccgctt cattgccgaa 720
 ttgcacgcc aaccgcacga ctatctcggg ctgctgacct tggggctgtc gatggggcaa 780
 tggttgagcg tcccgatgat tgttttgggt atcgtcggct ttgtccggtt cggcatgaaa 840
 aaacagcact ga 852

<210> 532
<211> 283
<212> PRT
<213> Neisseria meningitidis

<400> 532

Met Ile Thr His Pro Gln Phe Asp Pro Val Leu Ile Ser Ile Gly Pro
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Leu Ala Val Arg Trp Tyr Ala Leu Ser Tyr Ile Leu Gly Phe Ile Leu
20 25 30

Phe Thr Phe Leu Gly Arg Arg Arg Ile Ala Gln Gly Leu Ser Val Phe
35 40 45

Thr Lys Glu Ser Leu Asp Asp Phe Leu Thr Trp Gly Ile Leu Gly Val
50 55 60

Ile Leu Gly Gly Arg Leu Gly Tyr Val Leu Phe Tyr Lys Phe Ser Asp
65 70 75 80

Tyr Leu Ala His Pro Leu Asp Ile Phe Lys Val Trp Glu Gly Gly Met
85 90 95

Ser Phe His Gly Gly Phe Leu Gly Val Val Ile Ala Ile Arg Leu Phe
100 105 110

Gly Arg Lys His Gly Ile Gly Phe Leu Lys Leu Met Asp Thr Val Ala
115 120 125

Pro Leu Val Pro Leu Gly Leu Ala Ser Gly Arg Ile Gly Asn Phe Ile
130 135 140

Asn Gly Glu Leu Trp Gly Arg Val Thr Asp Ile Asn Ala Phe Trp Ala
145 150 155 160

Met Gly Phe Pro Gln Ala Arg Tyr Glu Asp Ala Glu Ala Ala Ala His
165 170 175

Asn Pro Leu Trp Ala Glu Trp Leu Gln Gln Tyr Gly Met Leu Pro Arg
180 185 190

His Pro Ser Gln Leu Tyr Gln Phe Ala Leu Glu Gly Ile Cys Leu Phe
195 200 205

Thr Val Ile Trp Leu Phe Ser Lys Lys Gln Arg Ser Thr Gly Gln Val
210 215 220

Ala Ser Leu Phe Leu Gly Gly Tyr Gly Ile Phe Arg Phe Ile Ala Glu
225 230 235 240

Phe Ala Arg Gln Pro Asp Asp Tyr Leu Gly Leu Leu Thr Leu Gly Leu
245 250 255

Ser Met Gly Gln Trp Leu Ser Val Pro Met Ile Val Leu Gly Ile Val
260 265 270

Gly Phe Val Arg Phe Gly Met Lys Lys Gln His
 275 280

<210> 533
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 <212> DNA
 <213> Neisseria meningitidis

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 atcgcgcaag gcttgtccgt ttttaccaaa gaatcgctcg acgacttcct gacatggggc 180
 attttgggcg taattttggg cgggcgtttg ggttacgtcc tgttttacia gttttccgac 240
 tacctcgccc atccgcttga tattttcaag gtatgggaag gcggaatgtc gttccacggc 300
 ggctttttgg gtgtagttat tgccatatgg ttgttcggtc gcaaacacgg catcggcttc 360
 ctcaaaactga tggacacggc cgcaccgctc gttccactgg gtctcgcttc gggacgtatc 420
 ggcaacttca tcaacggcga actttgggga cgcgttaccg acatcaacgc attttgggca 480
 atgggcttcc cgcaggcgcg ttacgaagac ctgcaagccg ccgcgcacaa tccgctttgg 540
 gcagaatggc tgcaacaata cggtagtctg ccgcgtcatc cctcgcagct ttatcagttt 600
 gcacttgaag gcatctgcct gttcgcgctc gtttggctgt tctctaaaaa acagcggccg 660
 accggacaag tcgcctcact cttcctcggc ggctacggca tattccgctt cattgccgaa 720
 tttgcacgcc aacccgacga ctatctcggg ctgctgacct tggggctgtc gatggggcaa 780
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 <211> 283
 <212> PRT
 <213> Neisseria meningitidis

<400> 534
 Met Ile Thr His Pro Gln Phe Asp Pro Val Leu Ile Ser Ile Gly Pro
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 20 25 30
 Phe Thr Phe Leu Gly Arg Arg Arg Ile Ala Gln Gly Leu Ser Val Phe
 35 40 45
 Thr Lys Glu Ser Leu Asp Asp Phe Leu Thr Trp Gly Ile Leu Gly Val
 50 55 60
 Ile Leu Gly Gly Arg Leu Gly Tyr Val Leu Phe Tyr Lys Phe Ser Asp
 65 70 75 80
 Tyr Leu Ala His Pro Leu Asp Ile Phe Lys Val Trp Glu Gly Gly Met
 85 90 95
 Ser Phe His Gly Gly Phe Leu Gly Val Val Ile Ala Ile Trp Leu Phe
 100 105 110
 Gly Arg Lys His Gly Ile Gly Phe Leu Lys Leu Met Asp Thr Val Ala
 115 120 125

Pro Leu Val Pro Leu Gly Leu Ala Ser Gly Arg Ile Gly Asn Phe Ile
 130 135 140
 Asn Gly Glu Leu Trp Gly Arg Val Thr Asp Ile Asn Ala Phe Trp Ala
 145 150 155 160
 Met Gly Phe Pro Gln Ala Arg Tyr Glu Asp Leu Glu Ala Ala Ala His
 165 170 175
 Asn Pro Leu Trp Ala Glu Trp Leu Gln Gln Tyr Gly Met Leu Pro Arg
 180 185 190
 His Pro Ser Gln Leu Tyr Gln Phe Ala Leu Glu Gly Ile Cys Leu Phe
 195 200 205
 Ala Val Val Trp Leu Phe Ser Lys Lys Gln Arg Pro Thr Gly Gln Val
 210 215 220
 Ala Ser Leu Phe Leu Gly Gly Tyr Gly Ile Phe Arg Phe Ile Ala Glu
 225 230 235 240
 Phe Ala Arg Gln Pro Asp Asp Tyr Leu Gly Leu Leu Thr Leu Gly Leu
 245 250 255
 Ser Met Gly Gln Trp Leu Ser Val Pro Met Ile Val Leu Gly Ile Val
 260 265 270
 Gly Phe Val Arg Phe Gly Met Lys Lys Gln His
 275 280

<210> 535
 <211> 897
 <212> DNA
 <213> *Neisseria gonorrhoeae*

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 accgaacctg ccttgaaaga agggtttgcc cgcgatgtcg tgctgctgaa gctggtcggc 180
 attcatcccg tcatcggttc cggcggcggg ccgcagatca atgcgatgct tgaaaaagtc 240
 ggcaaaaagg gcgaatttgt ccaaggaatg cgcgttaccg acaaagagac gatggatatt 300
 gtcgaaatgg tattgggcgg gcacgtcaac aaggaaatcg tgtcgatgat taacacatat 360
 ggagggcacg cggtcggcgt gagcgggcgc gacgaccatt tcattaaggc gaagaaactt 420
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 atcgataccg gtttggttaa agggctgata gaacgcggct gcattcccgt cgtcgccccc 540
 gtcggcgtag gtgaaaaagg cgaagcgttc aacatcaacg ccgatttggt ggcaggcaaa 600
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 gacaaaacgg gcaatctgct gaccaaactc acgccgaaac ggattgatgg gctgattgcc 720
 gacggcacgc tgtatggcgg tatgctgccg aaaatcgctt ctgcggtcga agccgccgtc 780
 aacggtgtga aagccacgca catcatcgac ggcaggttgc ccaacgcgct tttgctggaa 840
 atctttaccg atgccggtat cgggtcgtat attttaggca gaggggaaga tgcctga 897

<210> 536
 <211> 298

<212> PRT

<213> Neisseria gonorrhoeae

<400> 536

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Ala Glu Ala Leu Pro Tyr Ile Arg Arg Phe Ser Gly Ser Val Ala Val
  20             25             30

Ile Lys Tyr Gly Gly Asn Ala Met Thr Glu Pro Ala Leu Lys Glu Gly
  35             40             45

Phe Ala Arg Asp Val Val Leu Leu Lys Leu Val Gly Ile His Pro Val
  50             55             60

Ile Val His Gly Gly Gly Pro Gln Ile Asn Ala Met Leu Glu Lys Val
  65             70             75             80

Gly Lys Lys Gly Glu Phe Val Gln Gly Met Arg Val Thr Asp Lys Glu
  85             90             95

Thr Met Asp Ile Val Glu Met Val Leu Gly Gly His Val Asn Lys Glu
 100             105             110

Ile Val Ser Met Ile Asn Thr Tyr Gly Gly His Ala Val Gly Val Ser
 115             120             125

Gly Arg Asp Asp His Phe Ile Lys Ala Lys Lys Leu Leu Val Asp Thr
 130             135             140

Pro Glu Gln Asn Ser Val Asp Ile Gly Gln Val Gly Thr Val Glu Ser
 145             150             155             160

Ile Asp Thr Gly Leu Val Lys Gly Leu Ile Glu Arg Gly Cys Ile Pro
 165             170             175

Val Val Ala Pro Val Gly Val Gly Glu Lys Gly Glu Ala Phe Asn Ile
 180             185             190

Asn Ala Asp Leu Val Ala Gly Lys Leu Ala Glu Glu Leu Asn Ala Glu
 195             200             205

Lys Leu Leu Met Met Thr Asn Ile Ala Gly Val Met Asp Lys Thr Gly
 210             215             220

Asn Leu Leu Thr Lys Leu Thr Pro Lys Arg Ile Asp Gly Leu Ile Ala
 225             230             235             240

Asp Gly Thr Leu Tyr Gly Gly Met Leu Pro Lys Ile Ala Ser Ala Val
 245             250             255

Glu Ala Ala Val Asn Gly Val Lys Ala Thr His Ile Ile Asp Gly Arg
 260             265             270

Leu Pro Asn Ala Leu Leu Leu Glu Ile Phe Thr Asp Ala Gly Ile Gly
 275             280             285
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Ser Met Ile Leu Gly Arg Gly Glu Asp Ala
290 295

<210> 537
<211> 897
<212> DNA
<213> Neisseria meningitidis

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accgaacctg ccttgaaaga agggtttgcc cgcgatgtcg tgctgctgaa gctggtcggc 180
attcatcccg tcatcgttca cggcggcggg ccgcagatca atgcgatgct tgaaaaagtc 240
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gtcggcgtag gtgaaaaagg cgaagcgttc aacatcaacg ccgatttggt agcaggcaaa 600
ttggcggaaag aattgaacgc cgaaaaactc ttgatgatga cgaatatcgc cgggtgtgatg 660
gacaaaacgg gcaatctgct gaccaaactc acgccgaaac ggattgatga actgattgcc 720
gacggcacgc tgtatggcgg tatgctgccg aaaatcgctt ctgcggtcga agccgcgcgc 780
aacggtgtga aagccacgca tatcatcgac ggcaggttgc ccaacgcgct tttgctggaa 840
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<210> 538
<211> 298
<212> PRT
<213> Neisseria meningitidis

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Ala Glu Ala Leu Pro Tyr Ile Arg Arg Phe Ser Gly Ser Val Ala Val
20 25 30
Ile Lys Tyr Gly Gly Asn Ala Met Thr Glu Pro Ala Leu Lys Glu Gly
35 40 45
Phe Ala Arg Asp Val Val Leu Leu Lys Leu Val Gly Ile His Pro Val
50 55 60
Ile Val His Gly Gly Gly Pro Gln Ile Asn Ala Met Leu Glu Lys Val
65 70 75 80
Gly Lys Lys Gly Glu Phe Val Gln Gly Met Arg Val Thr Asp Lys Glu
85 90 95
Ala Met Asp Ile Val Glu Met Val Leu Gly Gly His Val Asn Lys Glu
100 105 110
Ile Val Ser Met Ile Asn Thr Tyr Gly Gly His Ala Val Gly Val Ser
115 120 125

Gly Arg Asp Asp His Phe Ile Lys Ala Lys Lys Leu Leu Ile Asp Thr
 130 135 140
 Pro Glu Gln Asn Gly Val Asp Ile Gly Gln Val Gly Thr Val Glu Ser
 145 150 155 160
 Ile Asp Thr Gly Leu Val Lys Gly Leu Ile Glu Arg Gly Cys Ile Pro
 165 170 175
 Val Val Ala Pro Val Gly Val Gly Glu Lys Gly Glu Ala Phe Asn Ile
 180 185 190
 Asn Ala Asp Leu Val Ala Gly Lys Leu Ala Glu Glu Leu Asn Ala Glu
 195 200 205
 Lys Leu Leu Met Met Thr Asn Ile Ala Gly Val Met Asp Lys Thr Gly
 210 215 220
 Asn Leu Leu Thr Lys Leu Thr Pro Lys Arg Ile Asp Glu Leu Ile Ala
 225 230 235 240
 Asp Gly Thr Leu Tyr Gly Gly Met Leu Pro Lys Ile Ala Ser Ala Val
 245 250 255
 Glu Ala Ala Val Asn Gly Val Lys Ala Thr His Ile Ile Asp Gly Arg
 260 265 270
 Leu Pro Asn Ala Leu Leu Leu Glu Ile Phe Thr Asp Ala Gly Ile Gly
 275 280 285
 Ser Met Ile Leu Gly Gly Gly Glu Asp Ala
 290 295

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 <211> 897
 <212> DNA
 <213> *Neisseria meningitidis*

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 accgaacctg ccttgaaaga agggtttgcc cgcgatgtcg tgctgctgaa gctggtcggc 180
 attcatcccc tcatcgttca cggcggcggg ccgcagatca atgcgatgct tgaaaaagtc 240
 ggcaaaaagg gtgagtttgt ccaaggaatg cgcgttacgc acaaagaggc gatggatatt 300
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 ggcggacacg cggtcggcgt aagcggacgc gacgaccatt tcattaaggc gaagaaactt 420
 ttgatcgata cgcccgaaca gaatggcgtg gacatcggac aggtcggtag ggtggaaagc 480
 atcgataccg gtttggttaa agggctgata gaacgtggct gcattcccgt cgtcgcccc 540
 gtcggcgtag gtgaaaaagg cgaagcgttc aacatcaacg ccgatttggg agcaggcaaa 600
 ttggcggaag aattgaacgc cgaaaaactc ttgatgatga cgaatatcgc cgggtgtgatg 660
 gacaaaacgg gcaatctgct gaccaaactc acgccgaaac ggattgatga actgattgcc 720
 gacggcacgc tgtatggcgg tatgctgccg aaaatcgctt ctgcggtcga agccgcgcgc 780
 aacggcgtga aagccacgca tatcatcgac ggcagggtgc ccaacgcgct tttgctggaa 840
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<211> 298
<212> PRT
<213> Neisseria meningitidis

<400> 540

Met Glu Ser Glu Asn Ile Ile Ser Ala Ala Asp Lys Ala Arg Ile Leu
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Ala Glu Ala Leu Pro Tyr Ile Arg Arg Phe Ser Gly Ser Val Ala Val
20 25 30

Ile Lys Tyr Gly Gly Asn Ala Met Thr Glu Pro Ala Leu Lys Glu Gly
35 40 45

Phe Ala Arg Asp Val Val Leu Leu Lys Leu Val Gly Ile His Pro Val
50 55 60

Ile Val His Gly Gly Gly Pro Gln Ile Asn Ala Met Leu Glu Lys Val
65 70 75 80

Gly Lys Lys Gly Glu Phe Val Gln Gly Met Arg Val Thr Asp Lys Glu
85 90 95

Ala Met Asp Ile Val Glu Met Val Leu Gly Gly His Val Asn Lys Glu
100 105 110

Ile Val Ser Met Ile Asn Thr Tyr Gly Gly His Ala Val Gly Val Ser
115 120 125

Gly Arg Asp Asp His Phe Ile Lys Ala Lys Lys Leu Leu Ile Asp Thr
130 135 140

Pro Glu Gln Asn Gly Val Asp Ile Gly Gln Val Gly Thr Val Glu Ser
145 150 155 160

Ile Asp Thr Gly Leu Val Lys Gly Leu Ile Glu Arg Gly Cys Ile Pro
165 170 175

Val Val Ala Pro Val Gly Val Gly Glu Lys Gly Glu Ala Phe Asn Ile
180 185 190

Asn Ala Asp Leu Val Ala Gly Lys Leu Ala Glu Glu Leu Asn Ala Glu
195 200 205

Lys Leu Leu Met Met Thr Asn Ile Ala Gly Val Met Asp Lys Thr Gly
210 215 220

Asn Leu Leu Thr Lys Leu Thr Pro Lys Arg Ile Asp Glu Leu Ile Ala
225 230 235 240

Asp Gly Thr Leu Tyr Gly Gly Met Leu Pro Lys Ile Ala Ser Ala Val
245 250 255

Glu Ala Ala Val Asn Gly Val Lys Ala Thr His Ile Ile Asp Gly Arg

260

265

270

Val Pro Asn Ala Leu Leu Leu Glu Ile Phe Thr Asp Ala Gly Ile Gly
 275 280 285

Ser Met Ile Leu Gly Gly Gly Glu Asp Ala
 290 295

<210> 541

<211> 537

<212> DNA

<213> Neisseria gonorrhoeae

<400> 541

atgcgaacca cctcaacctt ccctacaaaa actttcaaac cggctgccat ggcgttagct 60
 gttgcaacaa cactttctgc ctgcttaggc ggcggcggag gcggcacttc tgctcccgac 120
 tttaatgcag gcggcaccgg tatcggcagc aacagcaggg caacgatagc ggaatcagca 180
 gcagtatctt acgccggtat aaaaaacgaa atgtgcaaag acagaagcat gctctgtgcc 240
 ggtcgggatg acgttgcggt tacagacagg gatgccaaaa tcaaagcccc ccgaatctgc 300
 ataccggaga cttttcaaac ccaaatgacc aatattaaga atatgatcaa cctcaaacct 360
 gcaattgaag caggctatac aggacgcggg gtagaggtag gtatcgctga tacaggcgaa 420
 tccgtcggca gcatatcctt tcccgaactg tatggcagaa aagaacacgg ctataacgaa 480
 aattacaaaa acaaattaca aaaactatac ggcgtatatg cggaaggaag cgctga 537

<210> 542

<211> 178

<212> PRT

<213> Neisseria gonorrhoeae

<400> 542

Met Arg Thr Thr Ser Thr Phe Pro Thr Lys Thr Phe Lys Pro Ala Ala
 1 5 10 15

Met Ala Leu Ala Val Ala Thr Thr Leu Ser Ala Cys Leu Gly Gly Gly
 20 25 30

Gly Gly Gly Thr Ser Ala Pro Asp Phe Asn Ala Gly Gly Thr Gly Ile
 35 40 45

Gly Ser Asn Ser Arg Ala Thr Ile Ala Glu Ser Ala Ala Val Ser Tyr
 50 55 60

Ala Gly Ile Lys Asn Glu Met Cys Lys Asp Arg Ser Met Leu Cys Ala
 65 70 75 80

Gly Arg Asp Asp Val Ala Val Thr Asp Arg Asp Ala Lys Ile Lys Ala
 85 90 95

Pro Arg Ile Cys Ile Pro Glu Thr Phe Gln Thr Gln Met Thr Asn Ile
 100 105 110

Lys Asn Met Ile Asn Leu Lys Pro Ala Ile Glu Ala Gly Tyr Thr Gly
 115 120 125

Arg Gly Val Glu Val Gly Ile Val Asp Thr Gly Glu Ser Val Gly Ser

130	135	140
Ile Ser Phe Pro Glu Leu Tyr Gly Arg Lys Glu His Gly Tyr Asn Glu		
145	150	155 160
Asn Tyr Lys Asn Lys Leu Gln Lys Leu Tyr Gly Val Tyr Ala Glu Gly		
	165	170 175

Ser Ala

<210> 543
 <211> 528
 <212> DNA
 <213> Neisseria meningitidis

<400> 543
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 gttgcaacaa cactttctgc ctgcttaggc ggcggcggag gcggcacttc tgcgcccagac 120
 ttcaatgcag gcggtaccgg tatcggcagc aacagcagag caacaacagc gaaatcagca 180
 gcagtatctt acgccggtat caagaacgaa atgtgcaaag acagaagcat gctctgtgcc 240
 ggtcgggatg acgttgcggt tacagacagg gatgccaaaa tcaatgcccc cccccgaatc 300
 tgcataccgg agactttcca aaccctaaatg acgcattaca agaatttgat caacctcaaa 360
 cctgcaattg aagcaggcta tacaggacgc ggggtagagg taggtatcgt cgacacaggc 420
 gaatccgtcg gcagcatatc ctttcccga a ctgtatggca gaaaagaaca cggctataac 480
 gaaaattacg aaaaactata cggcgtatat gcggaaggaa gcgcctga 528

<210> 544
 <211> 175
 <212> PRT
 <213> Neisseria meningitidis

<400> 544
 Met Arg Thr Thr Pro Thr Phe Pro Thr Lys Thr Phe Lys Pro Thr Ala
 1 5 10 15
 Met Ala Leu Ala Val Ala Thr Thr Leu Ser Ala Cys Leu Gly Gly Gly
 20 25 30
 Gly Gly Gly Thr Ser Ala Pro Asp Phe Asn Ala Gly Gly Thr Gly Ile
 35 40 45
 Gly Ser Asn Ser Arg Ala Thr Thr Ala Lys Ser Ala Ala Val Ser Tyr
 50 55 60
 Ala Gly Ile Lys Asn Glu Met Cys Lys Asp Arg Ser Met Leu Cys Ala
 65 70 75 80
 Gly Arg Asp Asp Val Ala Val Thr Asp Arg Asp Ala Lys Ile Asn Ala
 85 90 95
 Pro Pro Arg Ile Cys Ile Pro Glu Thr Phe Gln Thr Gln Met Thr His
 100 105 110
 Tyr Lys Asn Leu Ile Asn Leu Lys Pro Ala Ile Glu Ala Gly Tyr Thr

115		120		125
Gly Arg Gly Val Glu Val Gly Ile Val Asp Thr Gly Glu Ser Val Gly				
130		135		140
Ser Ile Ser Phe Pro Glu Leu Tyr Gly Arg Lys Glu His Gly Tyr Asn				
145		150		155
				160
Glu Asn Tyr Glu Lys Leu Tyr Gly Val Tyr Ala Glu Gly Ser Ala				
	165		170	175

<210> 545
 <211> 526
 <212> DNA
 <213> Neisseria meningitidis

<400> 545
 atgcgaacga ccccaacctt ccctacaaaa actttcaaac cggctgccat ggcgttagct 60
 gttgcaacaa cactttctgc ctgcttaggc ggcggcggag gcggcacttc tgcgcccgcac 120
 ttcaatgcag gcggcaccgg tatcggcagc aacagcaggg caacaacagc gaaatcagca 180
 gcaatatctt acgccggtat caagaacgaa atgtgcaaag acagaagcat gctctgtgcc 240
 ggtcgggatg acgttgcggt tacagacagg gatgccaaaa tcaatgcccc cccccgaatc 300
 tgcataccgg agactttaca aaccctaatg acgcatacaa gaatttgatc aacctcaaac 360
 ctgcaattga agcaggctat acaggacgcg gggtagaggt aggtatcgtc gacacaggcg 420
 aatccgtcgg cagcatatcc tttcccgaac tgtatggcag aaaagaacac ggctataacg 480
 aaaattacaa aaactatacg gcgtatatgc ggaaggaagc gcctga 526

<210> 546
 <211> 175
 <212> PRT
 <213> Neisseria meningitidis

<400> 546
 Met Arg Thr Thr Pro Thr Phe Pro Thr Lys Thr Phe Lys Pro Ala Ala
 1 5 10 15
 Met Ala Leu Ala Val Ala Thr Thr Leu Ser Ala Cys Leu Gly Gly Gly
 20 25 30
 Gly Gly Gly Thr Ser Ala Pro Asp Phe Asn Ala Gly Gly Thr Gly Ile
 35 40 45
 Gly Ser Asn Ser Arg Ala Thr Thr Ala Lys Ser Ala Ala Ile Ser Tyr
 50 55 60
 Ala Gly Ile Lys Asn Glu Met Cys Lys Asp Arg Ser Met Leu Cys Ala
 65 70 75 80
 Gly Arg Asp Asp Val Ala Val Thr Asp Arg Asp Ala Lys Ile Asn Ala
 85 90 95
 Pro Pro Arg Ile Cys Ile Pro Glu Thr Leu Gln Thr Gln Met Thr His
 100 105 110
 Xaa Lys Asn Leu Ile Asn Leu Lys Pro Ala Ile Glu Ala Gly Tyr Thr

115	120	125
Gly Arg Gly Val Glu Val	Gly Ile Val Asp Thr	Gly Glu Ser Val Gly
130	135	140
Ser Ile Ser Phe Pro Glu Leu Tyr Gly Arg Lys Glu His Gly Tyr Asn		
145	150	155 160
Glu Asn Tyr Xaa Lys Leu Tyr Gly Val Tyr Ala Glu Gly Ser Ala		
	165 170	175

<210> 547
 <211> 1365
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 547
 atgtcggcac ggcggaaggg ggcaggctat ctcaacagta ccggacgaca tgttcccttc 60
 ctgagtgccg ccaaaatcgg gcaggattat tctttcttca aaaatatcaa aaccgacggc 120
 ggtctgctgg cttccctcga cagcgtcgaa aaaacagcgg gcagtgaagg cgacacgccg 180
 tcctattatg tccgtcgcgg caatgcggca cggactgctt cggcagcggc acattccgcg 240
 cccgccggtc tgaaacacgc cgtagaacag ggcggcagca atctggaaaa cctgatggtc 300
 gagctggatg cctccgaatc atccgcaaca cccgagacgg ttgaaactgc ggtcgccgac 360
 cgcacagata tgccgggcat ccgcctacgg cgcacaactt tccgcacagc ggcagccgta 420
 cagcatgcga ataccgccga cggcgtagc atcttcaaca gtctcgccgc taccgtctat 480
 gccgacagtg ccgccgccca tgccgatatg cagggaacgc gcctgaaagc cgtatcggac 540
 gggttggacc acaacggtag gggctcgcgc gtcacgcgc aaaccaaca ggacggtgga 600
 acgtgggaac agggcggtgt cgaaggcaaa atgcgcggca gtaccaaac tatcggcatt 660
 gccgcgaaaa ccggcgaaaa tacgacagca gccgccacac tgggcatagg acgcagcaca 720
 tggagcgaaa acagtgcaaa tgcaaaaacc gacagcatta gtctgtttgc aggcatacgg 780
 cacgatgtgg gcgatatcgg ctatctcaaa ggcctgttct cctacggacg ctacaaaaac 840
 agcatcagcc gcagcaccgg tcgggatgaa tatgcggaag gcagcgtcaa cggcacgctg 900
 atgcagctgg gcgcactggg tgggtgtcaac gttccgtttg ccgcaacggg agatttgacg 960
 gttgaaggcg gtctgcgcca cgacctgctc aaacaggatg cattcgccga aaaaggcagt 1020
 gctttgggct ggagcggcaa cagcctcact gaaggcacac tggtcggact cgcgggtctg 1080
 aaactgtcgc aacccttgag cgataaagcc gtctgtctg cgacggcggg cgtggaacgc 1140
 gacctgaacg gacgcgacta cgcggtaacg ggcggcttta ccggcgcggc tgcagcaacc 1200
 ggcaagacgg gtgcacgcaa tatgccgcac accgcgcggg ttgccggtct ggggggtgat 1260
 gtcgaattcg gcaacggctg gaacggcttg gcacgttaca gctacaccgg ttccaaacag 1320
 tacggcaacc acagcggaca aatcggcgta ggctaccggt tctga 1365

<210> 548
 <211> 454
 <212> PRT
 <213> Neisseria gonorrhoeae

<400> 548
 Met Ser Ala Arg Gly Lys Gly Ala Gly Tyr Leu Asn Ser Thr Gly Arg
 1 5 10 15
 His Val Pro Phe Leu Ser Ala Ala Lys Ile Gly Gln Asp Tyr Ser Phe
 20 25 30
 Phe Lys Asn Ile Lys Thr Asp Gly Gly Leu Leu Ala Ser Leu Asp Ser
 35 40 45

Val	Glu	Lys	Thr	Ala	Gly	Ser	Glu	Gly	Asp	Thr	Pro	Ser	Tyr	Tyr	Val	50	55	60	
Arg	Arg	Gly	Asn	Ala	Ala	Arg	Thr	Ala	Ser	Ala	Ala	Ala	His	Ser	Ala	65	70	75	80
Pro	Ala	Gly	Leu	Lys	His	Ala	Val	Glu	Gln	Gly	Gly	Ser	Asn	Leu	Glu	85	90	95	
Asn	Leu	Met	Val	Glu	Leu	Asp	Ala	Ser	Glu	Ser	Ser	Ala	Thr	Pro	Glu	100	105	110	
Thr	Val	Glu	Thr	Ala	Val	Ala	Asp	Arg	Thr	Asp	Met	Pro	Gly	Ile	Arg	115	120	125	
Leu	Arg	Arg	Thr	Thr	Phe	Arg	Thr	Ala	Ala	Ala	Val	Gln	His	Ala	Asn	130	135	140	
Thr	Ala	Asp	Gly	Val	Arg	Ile	Phe	Asn	Ser	Leu	Ala	Ala	Thr	Val	Tyr	145	150	155	160
Ala	Asp	Ser	Ala	Ala	Ala	His	Ala	Asp	Met	Gln	Gly	Arg	Arg	Leu	Lys	165	170	175	
Ala	Val	Ser	Asp	Gly	Leu	Asp	His	Asn	Gly	Thr	Gly	Leu	Arg	Val	Ile	180	185	190	
Ala	Gln	Thr	Gln	Gln	Asp	Gly	Gly	Thr	Trp	Glu	Gln	Gly	Gly	Val	Glu	195	200	205	
Gly	Lys	Met	Arg	Gly	Ser	Thr	Gln	Thr	Ile	Gly	Ile	Ala	Ala	Lys	Thr	210	215	220	
Gly	Glu	Asn	Thr	Thr	Ala	Ala	Ala	Thr	Leu	Gly	Ile	Gly	Arg	Ser	Thr	225	230	235	240
Trp	Ser	Glu	Asn	Ser	Ala	Asn	Ala	Lys	Thr	Asp	Ser	Ile	Ser	Leu	Phe	245	250	255	
Ala	Gly	Ile	Arg	His	Asp	Val	Gly	Asp	Ile	Gly	Tyr	Leu	Lys	Gly	Leu	260	265	270	
Phe	Ser	Tyr	Gly	Arg	Tyr	Lys	Asn	Ser	Ile	Ser	Arg	Ser	Thr	Gly	Ala	275	280	285	
Asp	Glu	Tyr	Ala	Glu	Gly	Ser	Val	Asn	Gly	Thr	Leu	Met	Gln	Leu	Gly	290	295	300	
Ala	Leu	Gly	Gly	Val	Asn	Val	Pro	Phe	Ala	Ala	Thr	Gly	Asp	Leu	Thr	305	310	315	320
Val	Glu	Gly	Gly	Leu	Arg	His	Asp	Leu	Leu	Lys	Gln	Asp	Ala	Phe	Ala	325	330	335	
Glu	Lys	Gly	Ser	Ala	Leu	Gly	Trp	Ser	Gly	Asn	Ser	Leu	Thr	Glu	Gly	340	345	350	

Thr Leu Val Gly Leu Ala Gly Leu Lys Leu Ser Gln Pro Leu Ser Asp
 355 360 365
 Lys Ala Val Leu Ser Ala Thr Ala Gly Val Glu Arg Asp Leu Asn Gly
 370 375 380
 Arg Asp Tyr Ala Val Thr Gly Gly Phe Thr Gly Ala Ala Ala Ala Thr
 385 390 395 400
 Gly Lys Thr Gly Ala Arg Asn Met Pro His Thr Arg Arg Val Ala Gly
 405 410 415
 Leu Gly Val Asp Val Glu Phe Gly Asn Gly Trp Asn Gly Leu Ala Arg
 420 425 430
 Tyr Ser Tyr Thr Gly Ser Lys Gln Tyr Gly Asn His Ser Gly Gln Ile
 435 440 445
 Gly Val Gly Tyr Arg Phe
 450

<210> 549
 <211> 1365
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 549
 atgtcggcac gcggaaggg ggcaggctat ctcaacagta ccggacgacg tgttcccttc 60
 ctgagtgccg ccaaaatcgg gcaggattat tctttcttca caaacatcga aaccgacggc 120
 ggctgtctgg cttccctcga cagcgtcgaa aaaacagcgg gcagtgaagg cgacacgctg 180
 tcctattatg tccgtcgcgg caatgcggca cggactgctt cggcagcggc acattccgcg 240
 cccgccggtc tgaaacacgc cgtagaacag ggccgcagca atctggaaaa cctgatggtc 300
 gaactggatg cctccgaatc atccgcaaca cccgagacgg ttgaaactgc ggacgccgac 360
 cgcacagata tgccgggcat ccgcccctac ggcgcaactt tccgcgcagc ggacgccgta 420
 cagcatgcga atgccgccga cgggtgtacgc atcttcaaca gtctcgccgc taccgtctat 480
 gccgacagta ccgccgccca tgccgatatg cagggacgcc gcctgaaaagc cgtatcggac 540
 gggttggacc acaacggcac ggggtctgcgc gtcacgcgc aaaccaaca ggacggtgga 600
 acgtgggaac agggcgggtg tgaaggcaaa atgcgcggca gtacccaaac cgtcggcatt 660
 gccgcgaaaa ccggcgaaaa tacgacagca gccgccacac tgggcatggg acgcagcaca 720
 tggagcgaaa acagtgcaaa tgcaaaaacc gacagcatta gtctgtttgc aggcatacgg 780
 cacgatgcgg gcgatatcgg ctatctcaaa ggctgttct cctacggacg ctacaaaaac 840
 agcatcagcc gcagcaccgg tgcggacgaa catgcggaag gcagcgtcaa cggcacgctg 900
 atgcagctgg gcgcactggg cgggtgtcaac gttccgtttg ccgcaacggg agatttgacg 960
 gtcgaaggcg gtctgcgcta cgacctgctc aaacaggatg cattcgccga aaaaggcagt 1020
 gctttgggct ggagcggcaa cagcctcact gaaggcacgc tggtcggact cgcgggtctg 1080
 aagctgtcgc aacccttgag cgataaagcc gtcctgtttg caacggcggg cgtggaacgc 1140
 gacctgaacg gacgcgacta cacggtaacg ggcggttta ccggcgcgac tgcagcaacc 1200
 ggcaagacgg gggcacgcaa tatgccgcac acccgtctgg ttgccggcct gggcgcggat 1260
 gtcgaattcg gcaacggctg gaacggcttg gcacgttaca gctacgccgg ttccaaacag 1320
 tacggcaacc acagcggacg agtcggcgta ggctaccggg tctga 1365

<210> 550
 <211> 454
 <212> PRT

<213> Neisseria meningitidis

<400> 550

Met	Ser	Ala	Arg	Gly	Lys	Gly	Ala	Gly	Tyr	Leu	Asn	Ser	Thr	Gly	Arg	
1				5					10					15		
Arg	Val	Pro	Phe	Leu	Ser	Ala	Ala	Lys	Ile	Gly	Gln	Asp	Tyr	Ser	Phe	
			20					25					30			
Phe	Thr	Asn	Ile	Glu	Thr	Asp	Gly	Gly	Leu	Leu	Ala	Ser	Leu	Asp	Ser	
		35					40					45				
Val	Glu	Lys	Thr	Ala	Gly	Ser	Glu	Gly	Asp	Thr	Leu	Ser	Tyr	Tyr	Val	
	50					55					60					
Arg	Arg	Gly	Asn	Ala	Ala	Arg	Thr	Ala	Ser	Ala	Ala	Ala	His	Ser	Ala	
65					70					75					80	
Pro	Ala	Gly	Leu	Lys	His	Ala	Val	Glu	Gln	Gly	Gly	Ser	Asn	Leu	Glu	
				85					90					95		
Asn	Leu	Met	Val	Glu	Leu	Asp	Ala	Ser	Glu	Ser	Ser	Ala	Thr	Pro	Glu	
			100						105				110			
Thr	Val	Glu	Thr	Ala	Ala	Ala	Asp	Arg	Thr	Asp	Met	Pro	Gly	Ile	Arg	
		115					120					125				
Pro	Tyr	Gly	Ala	Thr	Phe	Arg	Ala	Ala	Ala	Ala	Val	Gln	His	Ala	Asn	
	130					135					140					
Ala	Ala	Asp	Gly	Val	Arg	Ile	Phe	Asn	Ser	Leu	Ala	Ala	Thr	Val	Tyr	
145					150					155					160	
Ala	Asp	Ser	Thr	Ala	Ala	His	Ala	Asp	Met	Gln	Gly	Arg	Arg	Leu	Lys	
				165					170					175		
Ala	Val	Ser	Asp	Gly	Leu	Asp	His	Asn	Gly	Thr	Gly	Leu	Arg	Val	Ile	
			180					185					190			
Ala	Gln	Thr	Gln	Gln	Asp	Gly	Gly	Thr	Trp	Glu	Gln	Gly	Gly	Val	Glu	
		195					200					205				
Gly	Lys	Met	Arg	Gly	Ser	Thr	Gln	Thr	Val	Gly	Ile	Ala	Ala	Lys	Thr	
	210					215					220					
Gly	Glu	Asn	Thr	Thr	Ala	Ala	Ala	Thr	Leu	Gly	Met	Gly	Arg	Ser	Thr	
225					230					235					240	
Trp	Ser	Glu	Asn	Ser	Ala	Asn	Ala	Lys	Thr	Asp	Ser	Ile	Ser	Leu	Phe	
				245					250					255		
Ala	Gly	Ile	Arg	His	Asp	Ala	Gly	Asp	Ile	Gly	Tyr	Leu	Lys	Gly	Leu	
			260					265					270			
Phe	Ser	Tyr	Gly	Arg	Tyr	Lys	Asn	Ser	Ile	Ser	Arg	Ser	Thr	Gly	Ala	
		275					280					285				

Asp Glu His Ala Glu Gly Ser Val Asn Gly Thr Leu Met Gln Leu Gly
 290 295 300
 Ala Leu Gly Gly Val Asn Val Pro Phe Ala Ala Thr Gly Asp Leu Thr
 305 310 315 320
 Val Glu Gly Gly Leu Arg Tyr Asp Leu Leu Lys Gln Asp Ala Phe Ala
 325 330 335
 Glu Lys Gly Ser Ala Leu Gly Trp Ser Gly Asn Ser Leu Thr Glu Gly
 340 345 350
 Thr Leu Val Gly Leu Ala Gly Leu Lys Leu Ser Gln Pro Leu Ser Asp
 355 360 365
 Lys Ala Val Leu Phe Ala Thr Ala Gly Val Glu Arg Asp Leu Asn Gly
 370 375 380
 Arg Asp Tyr Thr Val Thr Gly Gly Phe Thr Gly Ala Thr Ala Ala Thr
 385 390 395 400
 Gly Lys Thr Gly Ala Arg Asn Met Pro His Thr Arg Leu Val Ala Gly
 405 410 415
 Leu Gly Ala Asp Val Glu Phe Gly Asn Gly Trp Asn Gly Leu Ala Arg
 420 425 430
 Tyr Ser Tyr Ala Gly Ser Lys Gln Tyr Gly Asn His Ser Gly Arg Val
 435 440 445
 Gly Val Gly Tyr Arg Phe
 450

<210> 551
 <211> 1365
 <212> DNA
 <213> Neisseria meningitidis

<400> 551
 atgtcggcag gcggttaagg ggcaggctat ctcaaccgta ccggacaacg tgttcccttc 60
 ctgagtgccg ccaaaatcgg gcgggattat tctttcttca caaacatcga aaccgacggc 120
 ggtctgctgg cttccctcga cagcgtcgaa aaaacagcgg gtagtgaagg cgacacgctg 180
 tcctattatg tccgtcgcgg caatgcggca cggactgctt cggcagcggc acattccgcg 240
 cccgcgggtc tgaaacacgc cgtagaacag gccggcagca atctggaaaa cctgatggtc 300
 gaactggatg cctccgaatc atccgcaaca cccgagacgg ttgaaactgc ggccgccgac 360
 cgcacagata tgccgggcat ccgcccctac ggcgcaactt tccgcgcagc ggcagccgta 420
 cagcatgcga atgccgccga cgggtgtacgc atcttcaaca atctcgcgcg taccgtctat 480
 gccgacagta ccgccgccca tgccgatatg cagggacgcc gcctgaaagc cgtatcggac 540
 gggttggacc acaacgctac gggctcgcgc gtcacgcgc aaaccaaca ggacgggtgga 600
 acgtgggaac agggcgggtgt tgaaggcaaa atgcgcggca gtacccaaac cgtcggcatt 660
 gccgcgaaaa ccggcgaaaa tacgacagca gccgccacac tgggcatggg acacagcaca 720
 tggagcgaaa acagtgc aaa tgcaaaaacc gacagcatta gtctgtttgc aggcatacgg 780
 cagcatgcgg gcgatatcgg ctatctcaaa ggctgttct cctacggacg ctacaaaaaac 840
 agcatcagcc gcagcaccgg tcgggacgaa catgcggaag gcagcgtcaa cggcacgctg 900
 atgcagctgg gcgcactggg cgggtgtcaac gttccgtttg ccgcaacggg agatttgacg 960
 gtcgaaggcg gtctgcgcta cgacctgctc aaacaggatg cattcgccga aaaaggcagt 1020

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gctttgggct ggagcggcaa cagcatcact gaaggcacac tggtcggact cgcgggtctg 1080
aagctgtcgc aacccttgag cgataaagcc gtcctgtttg caacggcggg cgtggaacgc 1140
gacctgaacg gacgcgacta cacggtaacg ggcggtttta ccggcgcgac tgcagcaacc 1200
ggcaagacgg gggcacgcaa tatgccgcac acccgctgg ttgccggtct gggcgcggat 1260
gtcgaattcg gcaacggctg gaacggcttg gcacgttaca gctacgccg ttccaaacag 1320
tacggcaacc acagcggacg agtcggcgta ggctaccggt tctga 1365

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<210> 552

<211> 454

<212> PRT

<213> *Neisseria meningitidis*

<400> 552

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Met Ser Ala Gly Gly Lys Gly Ala Gly Tyr Leu Asn Arg Thr Gly Gln
  1           5           10           15

Arg Val Pro Phe Leu Ser Ala Ala Lys Ile Gly Arg Asp Tyr Ser Phe
          20           25           30

Phe Thr Asn Ile Glu Thr Asp Gly Gly Leu Leu Ala Ser Leu Asp Ser
          35           40           45

Val Glu Lys Thr Ala Gly Ser Glu Gly Asp Thr Leu Ser Tyr Tyr Val
          50           55           60

Arg Arg Gly Asn Ala Ala Arg Thr Ala Ser Ala Ala Ala His Ser Ala
          65           70           75           80

Pro Ala Gly Leu Lys His Ala Val Glu Gln Gly Gly Ser Asn Leu Glu
          85           90           95

Asn Leu Met Val Glu Leu Asp Ala Ser Glu Ser Ser Ala Thr Pro Glu
          100          105          110

Thr Val Glu Thr Ala Ala Ala Asp Arg Thr Asp Met Pro Gly Ile Arg
          115          120          125

Pro Tyr Gly Ala Thr Phe Arg Ala Ala Ala Ala Val Gln His Ala Asn
          130          135          140

Ala Ala Asp Gly Val Arg Ile Phe Asn Asn Leu Ala Ala Thr Val Tyr
          145          150          155          160

Ala Asp Ser Thr Ala Ala His Ala Asp Met Gln Gly Arg Arg Leu Lys
          165          170          175

Ala Val Ser Asp Gly Leu Asp His Asn Ala Thr Gly Leu Arg Val Ile
          180          185          190

Ala Gln Thr Gln Gln Asp Gly Gly Thr Trp Glu Gln Gly Gly Val Glu
          195          200          205

Gly Lys Met Arg Gly Ser Thr Gln Thr Val Gly Ile Ala Ala Lys Thr
          210          215          220

Gly Glu Asn Thr Thr Ala Ala Ala Thr Leu Gly Met Gly His Ser Thr

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225		230		235		240
Trp Ser Glu Asn Ser Ala Asn Ala Lys Thr Asp Ser Ile Ser Leu Phe						
	245			250		255
Ala Gly Ile Arg His Asp Ala Gly Asp Ile Gly Tyr Leu Lys Gly Leu						
	260			265		270
Phe Ser Tyr Gly Arg Tyr Lys Asn Ser Ile Ser Arg Ser Thr Gly Ala						
	275			280		285
Asp Glu His Ala Glu Gly Ser Val Asn Gly Thr Leu Met Gln Leu Gly						
	290			295		300
Ala Leu Gly Gly Val Asn Val Pro Phe Ala Ala Thr Gly Asp Leu Thr						
	305			310		315
Val Glu Gly Gly Leu Arg Tyr Asp Leu Leu Lys Gln Asp Ala Phe Ala						
	325			330		335
Glu Lys Gly Ser Ala Leu Gly Trp Ser Gly Asn Ser Ile Thr Glu Gly						
	340			345		350
Thr Leu Val Gly Leu Ala Gly Leu Lys Leu Ser Gln Pro Leu Ser Asp						
	355			360		365
Lys Ala Val Leu Phe Ala Thr Ala Gly Val Glu Arg Asp Leu Asn Gly						
	370			375		380
Arg Asp Tyr Thr Val Thr Gly Gly Phe Thr Gly Ala Thr Ala Ala Thr						
	385			390		395
Gly Lys Thr Gly Ala Arg Asn Met Pro His Thr Arg Leu Val Ala Gly						
	405			410		415
Leu Gly Ala Asp Val Glu Phe Gly Asn Gly Trp Asn Gly Leu Ala Arg						
	420			425		430
Tyr Ser Tyr Ala Gly Ser Lys Gln Tyr Gly Asn His Ser Gly Arg Val						
	435			440		445
Gly Val Gly Tyr Arg Phe						
	450					

<210> 553
 <211> 1677
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 553
 atgagcttca aaaccgatgc cgaaaccgcc caatcctcca ccatgcgccc gattggcgaa 60
 attgccgcca agctgggttt gaacgttgac aacattgagc cttacgggtca ttacaaagcc 120
 aaaatcaatc ctgccgaagc gttcaagctg ccgcaaaaac aaggcaggct gattttggtt 180
 accgccatca acccgactcc ggcgggcgaa ggcaaaacca ccgtaaccat cggtttggcg 240
 gacgcattgc gccatatcgg caaagactct gtgattgctt tgcgcgagcc ttctttgggt 300
 ccggtgttcg gcgtgaaagg cggcgcgga ggcggcggct acgcgcaagt tttgccgatg 360

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gcgggcttca tcgttgcggt gtgcggcaat atgatgaaaa tgccgggcct gccgaaagtt 1620
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<210> 554

<211> 558

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 554

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Pro Ile Gly Glu Ile Ala Ala Lys Leu Gly Leu Asn Val Asp Asn Ile
          20                      25                      30

Glu Pro Tyr Gly His Tyr Lys Ala Lys Ile Asn Pro Ala Glu Ala Phe
          35                      40                      45

Lys Leu Pro Gln Lys Gln Gly Arg Leu Ile Leu Val Thr Ala Ile Asn
          50                      55                      60

Pro Thr Pro Ala Gly Glu Gly Lys Thr Thr Val Thr Ile Gly Leu Ala
          65                      70                      75                      80

Asp Ala Leu Arg His Ile Gly Lys Asp Ser Val Ile Ala Leu Arg Glu
          85                      90                      95

Pro Ser Leu Gly Pro Val Phe Gly Val Lys Gly Gly Ala Ala Gly Gly
          100                      105                      110

Gly Tyr Ala Gln Val Leu Pro Met Glu Asp Ile Asn Leu His Phe Thr
          115                      120                      125

Gly Asp Phe His Ala Ile Gly Ala Ala Asn Asn Leu Leu Ala Ala Met
          130                      135                      140

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Leu	Asp	Asn	His	Ile	Tyr	Gln	Gly	Asn	Glu	Leu	Asn	Ile	Asp	Pro	Lys	145	150	155	160
Arg	Val	Leu	Trp	Arg	Arg	Val	Val	Asp	Met	Asn	Asp	Arg	Gln	Leu	Arg	165	170	175	
Asn	Ile	Ile	Asp	Gly	Met	Gly	Lys	Pro	Val	Asp	Gly	Val	Met	Arg	Pro	180	185	190	
Asp	Gly	Phe	Asp	Ile	Thr	Val	Ala	Ser	Glu	Val	Met	Ala	Val	Phe	Cys	195	200	205	
Leu	Ala	Lys	Asp	Ile	Ser	Asp	Leu	Lys	Glu	Arg	Phe	Gly	Asn	Ile	Leu	210	215	220	
Val	Ala	Tyr	Ala	Lys	Asp	Gly	Ser	Pro	Val	Tyr	Ala	Lys	Asp	Leu	Lys	225	230	235	240
Ala	His	Gly	Ala	Met	Ala	Ala	Leu	Leu	Lys	Asp	Ala	Ile	Lys	Pro	Asn	245	250	255	
Leu	Val	Gln	Thr	Ile	Glu	Gly	Thr	Pro	Ala	Phe	Val	His	Gly	Gly	Pro	260	265	270	
Phe	Ala	Asn	Ile	Ala	His	Gly	Cys	Asn	Ser	Val	Thr	Ala	Thr	Arg	Leu	275	280	285	
Ala	Lys	His	Leu	Ala	Asp	Tyr	Ala	Val	Thr	Glu	Ala	Gly	Phe	Gly	Ala	290	295	300	
Asp	Leu	Gly	Ala	Glu	Lys	Phe	Cys	Asp	Ile	Lys	Cys	Arg	Leu	Ala	Gly	305	310	315	320
Leu	Lys	Pro	Asp	Ala	Ala	Val	Val	Val	Ala	Thr	Val	Arg	Ala	Leu	Lys	325	330	335	
Tyr	Asn	Gly	Gly	Val	Glu	Arg	Ala	Asn	Leu	Gly	Glu	Glu	Asn	Leu	Glu	340	345	350	
Ala	Leu	Ala	Lys	Gly	Leu	Pro	Asn	Leu	Leu	Lys	His	Ile	Ser	Asn	Leu	355	360	365	
Lys	Asn	Val	Phe	Gly	Leu	Pro	Val	Val	Val	Ala	Leu	Asn	Arg	Phe	Val	370	375	380	
Ser	Asp	Ser	Asp	Ala	Glu	Leu	Ala	Met	Ile	Glu	Lys	Ala	Cys	Ala	Glu	385	390	395	400
His	Gly	Val	Glu	Val	Ser	Leu	Thr	Glu	Val	Trp	Gly	Lys	Gly	Gly	Ala	405	410	415	
Gly	Gly	Ala	Asp	Leu	Ala	Arg	Lys	Val	Val	Asn	Ala	Ile	Asp	Asn	Gln	420	425	430	
Pro	Asn	Asn	Phe	Gly	Phe	Ala	Tyr	Asp	Val	Glu	Leu	Gly	Ile	Lys	Asp	435	440	445	

Lys Ile Arg Ala Ile Ala Gln Lys Val Tyr Gly Ala Glu Asp Val Asp
450 455 460

Phe Ser Ala Glu Ala Ser Ala Glu Ile Ala Ser Leu Glu Lys Leu Gly
465 470 475 480

Leu Asp Lys Met Pro Ile Cys Met Ala Lys Thr Gln Tyr Ser Leu Ser
485 490 495

Asp Asn Ala Lys Leu Leu Gly Cys Pro Glu Gly Phe Arg Ile Ala Val
500 505 510

Arg Gly Ile Thr Val Ser Ala Gly Ala Gly Phe Ile Val Ala Leu Cys
515 520 525

Gly Asn Met Met Lys Met Pro Gly Leu Pro Lys Val Pro Ala Ala Glu
530 535 540

Lys Ile Asp Val Asp Glu His Gly Val Ile His Gly Leu Phe
545 550 555

<210> 555

<211> 1677

<212> DNA

<213> Neisseria meningitidis

<400> 555

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aaaatcaatc ctgccgaagc gttcaaactg ccgcaaaaac agggcaggct gattttggtt 180

accgccatca acccgactcc ggcgggcgaa ggcaaaacca ccgtaaccat cggtttggcg 240
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ccggtgttcg gcgtgaaagg cggcgcgcca ggcgcggtct atgcccaagt ttgcccgatg 360
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cttgccgcga tgctcgacaa ccatactctac caaggcaacg agttgaacat cgaccccaaa 480
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tccgaagtga tggcgggtatt ctgtcttgcc aaagacatca gcgatttgaa agagcggttg 660
ggcaacatcc ttgtcgccca cgccaaagac ggcagccccg ttacgccaag agatttgaaa 720
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atcgaaggca cgccgcctt cgtacacggc ggcccggtcg ccaacatcgc ccacggctgc 840
aactccgtaa ccgcaaccgc tctggcgaaa caccttgccg attacgccgt aaccgaagca 900
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cacggcggtt aggtttccct gaccgaagtg tggggcaaaag gtggtgctgg cggcgcgat 1260
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<210> 556

<211> 558

<212> PRT

<213> Neisseria meningitidis

<400> 556

Met Ser Phe Lys Thr Asp Ala Glu Ile Ala Gln Ser Ser Thr Met Arg
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20 25 30

Glu Pro Tyr Gly His Tyr Lys Ala Lys Ile Asn Pro Ala Glu Ala Phe
35 40 45

Lys Leu Pro Gln Lys Gln Gly Arg Leu Ile Leu Val Thr Ala Ile Asn
50 55 60

Pro Thr Pro Ala Gly Glu Gly Lys Thr Thr Val Thr Ile Gly Leu Ala
65 70 75 80

Asp Ala Leu Arg His Ile Gly Lys Asp Ala Val Ile Ala Leu Arg Glu
85 90 95

Pro Ser Leu Gly Pro Val Phe Gly Val Lys Gly Gly Ala Ala Gly Gly
100 105 110

Gly Tyr Ala Gln Val Leu Pro Met Glu Asp Ile Asn Leu His Phe Thr
115 120 125

Gly Asp Phe His Ala Ile Gly Ala Ala Asn Asn Leu Leu Ala Ala Met
130 135 140

Leu Asp Asn His Ile Tyr Gln Gly Asn Glu Leu Asn Ile Asp Pro Lys
145 150 155 160

Arg Val Leu Trp Arg Arg Val Val Asp Met Asn Asp Arg Gln Leu Arg
165 170 175

Asn Ile Ile Asp Gly Met Gly Lys Pro Val Asp Gly Val Met Arg Pro
180 185 190

Asp Gly Phe Asp Ile Thr Val Ala Ser Glu Val Met Ala Val Phe Cys
195 200 205

Leu Ala Lys Asp Ile Ser Asp Leu Lys Glu Arg Leu Gly Asn Ile Leu
210 215 220

Val Ala Tyr Ala Lys Asp Gly Ser Pro Val Tyr Ala Lys Asp Leu Lys
225 230 235 240

Ala Asn Gly Ala Met Ala Ala Leu Leu Lys Asp Ala Ile Lys Pro Asn
245 250 255

Leu Val Gln Thr Ile Glu Gly Thr Pro Ala Phe Val His Gly Gly Pro

260	265	270
Phe Ala Asn Ile Ala His Gly Cys Asn Ser Val Thr Ala Thr Arg Leu 275 280 285		
Ala Lys His Leu Ala Asp Tyr Ala Val Thr Glu Ala Gly Phe Gly Ala 290 295 300		
Asp Leu Gly Ala Glu Lys Phe Cys Asp Ile Lys Cys Arg Leu Ala Gly 305 310 315 320		
Leu Lys Pro Asp Ala Ala Val Val Val Ala Thr Val Arg Ala Leu Lys 325 330 335		
Tyr Asn Gly Gly Val Glu Arg Ala Asn Leu Gly Glu Glu Asn Leu Asp 340 345 350		
Ala Leu Glu Lys Gly Leu Pro Asn Leu Leu Lys His Ile Ser Asn Leu 355 360 365		
Lys Asn Val Phe Gly Leu Pro Val Val Val Ala Leu Asn Arg Phe Val 370 375 380		
Ser Asp Ala Asp Ala Glu Leu Ala Met Ile Glu Lys Ala Cys Ala Glu 385 390 395 400		
His Gly Val Glu Val Ser Leu Thr Glu Val Trp Gly Lys Gly Gly Ala 405 410 415		
Gly Gly Ala Asp Leu Ala Arg Lys Val Val Asn Ala Ile Glu Ser Gln 420 425 430		
Thr Asn Asn Phe Gly Phe Ala Tyr Asp Val Glu Leu Gly Ile Lys Asp 435 440 445		
Lys Ile Arg Ala Ile Ala Gln Lys Val Tyr Gly Ala Glu Asp Val Asp 450 455 460		
Phe Ser Ala Glu Ala Ser Ala Glu Ile Ala Ser Leu Glu Lys Leu Gly 465 470 475 480		
Leu Asp Lys Met Pro Ile Cys Met Ala Lys Thr Gln Tyr Ser Leu Ser 485 490 495		
Asp Asn Ala Lys Leu Leu Gly Cys Pro Glu Asp Phe Arg Ile Ala Val 500 505 510		
Arg Gly Ile Thr Val Ser Ala Gly Ala Gly Phe Ile Val Ala Leu Cys 515 520 525		
Gly Asn Met Met Lys Met Pro Gly Leu Pro Lys Val Pro Ala Ala Glu 530 535 540		
Lys Ile Asp Val Asp Ala Glu Gly Val Ile His Gly Leu Phe 545 550 555		

<210> 557
 <211> 1677
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 557
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 aaaatcaatc ctgccgaagc gttcaaactg ccgcaaaaac agggcaggct gatttttggtt 180
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 cttgccgcca tgctcgacaa ccatatctac caaggcaacg agttgaacat cgaccccaaa 480
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 ggcatgggca agcctgttga cggcgatgat cgtcctgacg gtttcgatat taccgttgct 600
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 gcaggtttca tcgtcgccct gtgcggcaac atgatgaaaa tgcccggcct gcccaaagtt 1620
 ccggtgcgcg agaaaatcga tgtggacgca gaaggcgtga ttcacggctt gttctga 1677

<210> 558
 <211> 558
 <212> PRT
 <213> *Neisseria meningitidis*

<400> 558
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 20 25 30
 Glu Pro Tyr Gly His Tyr Lys Ala Lys Ile Asn Pro Ala Glu Ala Phe
 35 40 45
 Lys Leu Pro Gln Lys Gln Gly Arg Leu Ile Leu Val Thr Ala Ile Asn
 50 55 60
 Pro Thr Pro Ala Gly Glu Gly Lys Thr Thr Val Thr Ile Gly Leu Ala
 65 70 75 80

Asp Ala Leu Arg His Ile Gly Lys Asp Ser Val Ile Ala Leu Arg Glu
 85 90 95
 Pro Ser Leu Gly Pro Val Phe Gly Val Lys Gly Gly Ala Ala Gly Gly
 100 105 110
 Gly Tyr Ala Gln Val Leu Pro Met Glu Asp Ile Asn Leu His Phe Thr
 115 120 125
 Gly Asp Phe His Ala Ile Gly Ala Ala Asn Asn Leu Leu Ala Ala Met
 130 135 140
 Leu Asp Asn His Ile Tyr Gln Gly Asn Glu Leu Asn Ile Asp Pro Lys
 145 150 155 160
 Arg Val Leu Trp Arg Arg Val Val Asp Met Asn Asp Arg Gln Leu Arg
 165 170 175
 Asn Ile Ile Asp Gly Met Gly Lys Pro Val Asp Gly Val Met Arg Pro
 180 185 190
 Asp Gly Phe Asp Ile Thr Val Ala Ser Glu Val Met Ala Val Phe Cys
 195 200 205
 Leu Ala Lys Asp Ile Ser Asp Leu Lys Glu Arg Leu Gly Asn Ile Leu
 210 215 220
 Val Ala Tyr Ala Lys Asp Gly Ser Pro Val Tyr Ala Lys Asp Leu Lys
 225 230 235 240
 Ala Asn Gly Ala Met Ala Ala Leu Leu Lys Asp Ala Ile Lys Pro Asn
 245 250 255
 Leu Val Gln Thr Ile Glu Gly Thr Pro Ala Phe Val His Gly Gly Pro
 260 265 270
 Phe Ala Asn Ile Ala His Gly Cys Asn Ser Val Thr Ala Thr Arg Leu
 275 280 285
 Ala Lys His Leu Ala Asp Tyr Ala Val Thr Glu Ala Gly Phe Gly Ala
 290 295 300
 Asp Leu Gly Ala Glu Lys Phe Cys Asp Ile Lys Cys Arg Leu Ala Gly
 305 310 315 320
 Leu Lys Pro Asp Ala Ala Val Val Val Ala Thr Val Arg Ala Leu Lys
 325 330 335
 Tyr Asn Gly Gly Val Glu Arg Ala Asn Leu Gly Glu Glu Asn Leu Asp
 340 345 350
 Ala Leu Glu Lys Gly Leu Pro Asn Leu Leu Lys His Ile Ser Asn Leu
 355 360 365
 Lys Asn Val Phe Gly Leu Pro Val Val Val Ala Leu Asn Arg Phe Val
 370 375 380

Ser Asp Ser Asp Ala Glu Leu Ala Met Ile Glu Lys Ala Cys Ala Glu
 385 390 395 400
 His Gly Val Glu Val Ser Leu Thr Glu Val Trp Gly Lys Gly Gly Ala
 405 410 415
 Gly Gly Ala Asp Leu Ala Arg Lys Val Val Asn Ala Ile Glu Ser Gln
 420 425 430
 Thr Asn Asn Phe Gly Phe Ala Tyr Asp Val Glu Leu Gly Ile Lys Asp
 435 440 445
 Lys Ile Arg Ala Ile Ala Gln Lys Val Tyr Gly Ala Glu Asp Val Asp
 450 455 460
 Phe Ser Ala Glu Ala Ser Ala Glu Ile Ala Ser Leu Glu Lys Leu Gly
 465 470 475 480
 Leu Asp Lys Met Pro Ile Cys Met Ala Lys Thr Gln Tyr Ser Leu Ser
 485 490 495
 Asp Asn Ala Lys Leu Leu Gly Cys Pro Glu Asp Phe Arg Ile Ala Val
 500 505 510
 Arg Gly Ile Thr Val Ser Ala Gly Ala Gly Phe Ile Val Ala Leu Cys
 515 520 525
 Gly Asn Met Met Lys Met Pro Gly Leu Pro Lys Val Pro Ala Ala Glu
 530 535 540
 Lys Ile Asp Val Asp Ala Glu Gly Val Ile His Gly Leu Phe
 545 550 555

<210> 559
 <211> 477
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 559
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 cgacaggccg gtcagcccgg caaatgttc ggcaacatcc tgatgttcgt ccgccagcat 180
 attgatgcag aggtgcggt ttccgacag gatcggaatg attcgcgcac tccggtttat 240
 gcacagcatc acggtcggcg gctcgtcggg aaccggcgca accgcgcca ttgtaatgcc 300
 gtaacgccct gccgcaccgt ctgtcgtgat gacatgaacg cctgccgcac aggatgccat 360
 cgcatacagg aacgaagttt gaaaagtttt ctgcaaatcc gccatttttc ccctttaaac 420
 cgtcccctat ataagaatgc tgcacacaag gcatccccc atgtgcagca gttctga 477

<210> 560
 <211> 158
 <212> PRT
 <213> Neisseria gonorrhoeae

<400> 560

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 Gln Arg Ala Phe Tyr Phe Lys Leu Ser Arg Phe Ala Ala Met Pro Asn
 20 25 30
 Met Val Gly Lys Pro Leu Phe Gly Arg Gln Ala Gly Gln Pro Gly Lys
 35 40 45
 Met Phe Gly Asn Ile Leu Met Phe Val Arg Gln His Ile Asp Ala Glu
 50 55 60
 Ala Ala Val Phe Arg Gln Asp Arg Asn Asp Ser Arg Thr Pro Val Tyr
 65 70 75 80
 Ala Gln His His Gly Arg Arg Leu Val Gly Asn Arg Arg Asn Arg Arg
 85 90 95
 His Cys Asn Ala Val Thr Pro Cys Arg Thr Val Cys Arg Asp Asp Met
 100 105 110
 Asn Ala Cys Arg Thr Gly Cys His Arg Ile Thr Glu Arg Ser Leu Lys
 115 120 125
 Ser Phe Leu Gln Ile Arg His Phe Ser Pro Leu Asn Arg Pro Leu Tyr
 130 135 140
 Lys Asn Ala Ala His Lys Ala Ser Pro His Val Gln Gln Phe
 145 150 155

<210> 561
 <211> 477
 <212> DNA
 <213> Neisseria meningitidis

<400> 561
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 cgacaggccg gtcagcccgg caaaatgttc ggcaacatcc tgatgttcgt ccgccagcgt 180
 attgatgcag aggtgccgt tttccgacag gatcggaatg attcgcgcac tccggttgat 240
 gcacagcatc acggtcggcg gtcgtcgtg aaccggcgcg accgcgtca ttgtaatgcc 300
 gtaacgccct gccgcaccgt ctgtcgtgat gacatgaacg cctgccgcgc aagatgccat 360
 cgcatacagg aacgaagttt gaaaatttt ctgcaaatac gccatttttc ccttttaaac 420
 tgtcccctat ataagaatgc tgcacacaag gcatccccc atgtgcagca gttttga 477

<210> 562
 <211> 158
 <212> PRT
 <213> Neisseria meningitidis

<400> 562
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20 25 30
 Val Val Gly Lys Pro Leu Phe Gly Arg Gln Ala Gly Gln Pro Gly Lys
 35 40 45
 Met Phe Gly Asn Ile Leu Met Phe Val Arg Gln Arg Ile Asp Ala Glu
 50 55 60
 Ala Ala Val Phe Arg Gln Asp Arg Asn Asp Ser Arg Thr Pro Val Asp
 65 70 75 80
 Ala Gln His His Gly Arg Arg Leu Val Gly Asn Arg Arg Asp Arg Arg
 85 90 95
 His Cys Asn Ala Val Thr Pro Cys Arg Thr Val Cys Arg Asp Asp Met
 100 105 110
 Asn Ala Cys Arg Ala Arg Cys His Arg Ile Thr Glu Arg Ser Leu Lys
 115 120 125
 Ile Phe Leu Gln Ile Arg His Phe Ser Pro Leu Asn Cys Pro Leu Tyr
 130 135 140
 Lys Asn Ala Ala His Lys Ala Ser Pro His Val Gln Gln Phe
 145 150 155

<210> 563
 <211> 948
 <212> DNA
 <213> Neisseria meningitidis

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 cgacaggccg gtcagcccgg caaaatgttc ggcaacatcc tgatgttcgt ccgccagcgt 180
 attgatgcag aggtgcggt tttccgacag gatcggaatg attcgcgcac tccggttgat 240
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 gtaacgccct gccgcaccgt ctgtcgtgat gacatgaacg cctgccgcac aggatgccat 360
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 tgtcccctat ataagaatgc tgcacacaag gcacccccca tgtgcagcag ttctgattca 480
 aaaagccgtc ggtcgacat ttccgcgctg tacggcggtat tacgagttca acgcatcctc 540
 gattttggca agttctgcca acaggtcttt aagcagcagc attttctcgc ggcccagcac 600
 ttcttcgata gcgtcgtaac gctcgtccac ttcttcgcgg atttctctcat acagcttctc 660
 gccctcggca gtcagcttca gaaaaacacg tcgttggtcg ttggaagggt tcaggcggac 720
 aaccaaacc gctttttcaa ggccgggtcag gataccggtc aggtctggggc gcaaaatgca 780
 cgcttgattc gccaaatctt gaaagtccag cgtgccgttt tccgccaaaa gacggataat 840
 ccgccattgc tgatcggtaa tattcgctg attcagaata ggctgaatt gggtcatcag 900
 ggcttccctt gcctgtatca gaccgatatt gatagacgca tgttttga 948

<210> 564
 <211> 315
 <212> PRT
 <213> Neisseria meningitidis

<400> 564

Met Arg Ala Asp Phe Met Phe Ala Asp Asn Met Pro Val Gln Val Arg
1 5 10 15
Gln Arg Ala Leu Tyr Phe Lys Leu Ser Arg Phe Ala Ala Met Pro Asp
20 25 30
Val Val Gly Lys Pro Leu Phe Gly Arg Gln Ala Gly Gln Pro Gly Lys
35 40 45
Met Phe Gly Asn Ile Leu Met Phe Val Arg Gln Arg Ile Asp Ala Glu
50 55 60
Ala Ala Val Phe Arg Gln Asp Arg Asn Asp Ser Arg Thr Pro Val Asp
65 70 75 80
Ala Gln His His Gly Arg Arg Leu Val Arg Asn Arg Arg Asn Arg Arg
85 90 95
His Cys Asn Ala Val Thr Pro Cys Arg Thr Val Cys Arg Asp Asp Met
100 105 110
Asn Ala Cys Arg Thr Gly Cys His Arg Ile Thr Glu Arg Ser Leu Lys
115 120 125
Ser Phe Leu Gln Ile Arg His Phe Ser Pro Leu Asn Cys Pro Leu Tyr
130 135 140
Lys Asn Ala Ala His Lys Ala Pro Pro Met Cys Ser Ser Ser Asp Ser
145 150 155 160
Lys Ser Arg Arg Ser Asp Ile Ser Ala Arg Tyr Gly Val Leu Arg Val
165 170 175
Gln Arg Ile Leu Asp Phe Gly Lys Phe Cys Gln Gln Val Phe Lys Gln
180 185 190
Gln His Phe Leu Ala Ala Gln His Phe Leu Asp Ser Val Val Thr Leu
195 200 205
Val His Phe Phe Ala Asp Phe Leu Ile Gln Leu Leu Ala Leu Gly Ser
210 215 220
Gln Leu Gln Lys Asn Thr Ser Leu Val Val Gly Arg Phe Gln Ala Asp
225 230 235 240
Asn Gln Thr Arg Phe Phe Lys Ala Gly Gln Asp Thr Gly Gln Ala Gly
245 250 255
Ala Gln Asn Ala Arg Leu Ile Arg Gln Ile Leu Lys Val Gln Arg Ala
260 265 270
Val Phe Arg Gln Lys Thr Asp Asn Pro Pro Leu Leu Ile Gly Asn Ile
275 280 285
Arg Leu Ile Gln Asn Arg Pro Glu Leu Gly His Gln Gly Phe Pro Cys
290 295 300

Leu Tyr Gln Thr Asp Ile Asp Arg Arg Met Phe
305 310 315

<210> 565
<211> 1290
<212> DNA
<213> Neisseria gonorrhoeae

<400> 565
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ccgcgcgtgg cggggatgct ggttcagccg atagtgggct actactcaga ccgcacttgg 180
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gccttgctgt tcggcgcgct gatgattgct ctggtggacg tgcgctcgaa tatggcgatg 360
cagccggtta agatgatggt cggcgatatg gtcaacgagg agcagaaaag ctacgcctac 420
gggattcaaa gtttcttagc gaatacggac gcggttggtg cagcgattct gccgtttgtg 480
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gtagcattct atgtgggtgc ggcgttactg attattacca gtgcgttcac aatctccaaa 600
gtcaaagaat acgaccgga aacctacgcc cgttaccacg gcacgatgt cgcgcgaat 660
caggaaaaag ccaactggtt cgaactctta aaaaccgcgc ctaaagtgtt ttggacggtt 720
actccggtac agtttttctg ctggttcgcc ttccggtata tgtggactta ctcggcaggc 780
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ggcaaccggt acggcggttt ggccggcggtg tagtcggttg cggcggtgat ttgttcgtt 900
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caggcaacca tgttcttggt tgcaggcgca gtcttgctgc tgggagcctt ctcagtctgt 1260
ctgattaaag agatccacgg cggggtttga 1290

<210> 566
<211> 428
<212> PRT
<213> Neisseria gonorrhoeae

<400> 566
Met Leu Ser Phe Gly Tyr Leu Gly Val Gln Thr Ala Phe Thr Leu Gln
1 5 10 15
Ser Ser Gln Met Ser Arg Ile Phe Gln Thr Leu Gly Ala Asp Pro His
20 25 30
Asn Leu Gly Trp Phe Phe Ile Leu Pro Pro Leu Ala Gly Met Leu Val
35 40 45
Gln Pro Ile Val Gly Tyr Tyr Ser Asp Arg Thr Trp Lys Pro Arg Leu
50 55 60
Gly Gly Arg Arg Leu Pro Tyr Leu Leu Tyr Gly Thr Leu Ile Ala Val
65 70 75 80
Ile Val Met Ile Leu Met Pro Asn Ser Gly Ser Phe Gly Phe Gly Tyr
85 90 95

Ala	Ser	Leu	Ala	Ala	Leu	Ser	Phe	Gly	Ala	Leu	Met	Ile	Ala	Leu	Leu	100	105	110
Asp	Val	Ser	Ser	Asn	Met	Ala	Met	Gln	Pro	Phe	Lys	Met	Met	Val	Gly	115	120	125
Asp	Met	Val	Asn	Glu	Glu	Gln	Lys	Ser	Tyr	Ala	Tyr	Gly	Ile	Gln	Ser	130	135	140
Phe	Leu	Ala	Asn	Thr	Asp	Ala	Val	Val	Ala	Ala	Ile	Leu	Pro	Phe	Val	145	150	155
Phe	Ala	Tyr	Ile	Gly	Leu	Ala	Asn	Thr	Ala	Glu	Lys	Gly	Val	Val	Pro	165	170	175
Gln	Thr	Val	Val	Val	Ala	Phe	Tyr	Val	Gly	Ala	Ala	Leu	Leu	Ile	Ile	180	185	190
Thr	Ser	Ala	Phe	Thr	Ile	Ser	Lys	Val	Lys	Glu	Tyr	Asp	Pro	Glu	Thr	195	200	205
Tyr	Ala	Arg	Tyr	His	Gly	Ile	Asp	Val	Ala	Ala	Asn	Gln	Glu	Lys	Ala	210	215	220
Asn	Trp	Phe	Glu	Leu	Leu	Lys	Thr	Ala	Pro	Lys	Val	Phe	Trp	Thr	Val	225	230	235
Thr	Pro	Val	Gln	Phe	Phe	Cys	Trp	Phe	Ala	Phe	Arg	Tyr	Met	Trp	Thr	245	250	255
Tyr	Ser	Ala	Gly	Ala	Ile	Ala	Glu	Asn	Val	Trp	His	Thr	Thr	Asp	Ala	260	265	270
Ser	Ser	Val	Gly	His	Gln	Glu	Ala	Gly	Asn	Arg	Tyr	Gly	Val	Leu	Ala	275	280	285
Ala	Val	Ser	Val	Ala	Ala	Val	Ile	Cys	Ser	Phe	Ile	Leu	Ala	Lys	Val	290	295	300
Pro	Asn	Lys	Tyr	His	Lys	Ala	Gly	Tyr	Phe	Gly	Cys	Leu	Ala	Leu	Gly	305	310	315
Ala	Leu	Gly	Phe	Phe	Ser	Ile	Phe	Phe	Ile	Tyr	Asn	Gln	Tyr	Ala	Leu	325	330	335
Ile	Leu	Ser	Tyr	Ile	Leu	Ile	Gly	Ile	Ala	Trp	Ala	Gly	Ile	Ile	Thr	340	345	350
Tyr	Pro	Leu	Thr	Ile	Val	Ala	Asn	Ala	Leu	Ser	Gly	Lys	His	Met	Asp	355	360	365
Thr	Tyr	Leu	Gly	Leu	Phe	Asn	Gly	Ser	Val	Cys	Met	Pro	Gln	Ile	Val	370	375	380
Ala	Ser	Leu	Leu	Ser	Phe	Val	Leu	Phe	Pro	Met	Leu	Gly	Gly	His	Gln			

385

390

395

400

Ala Thr Met Phe Leu Val Ala Gly Ala Val Leu Leu Leu Gly Ala Phe
 405 410 415

Ser Val Cys Leu Ile Lys Glu Ile His Gly Gly Val
 420 425

<210> 567

<211> 1290

<212> DNA

<213> *Neisseria meningitidis*

<400> 567

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agccgcattt ttcaaacgct aggcgcagac ccgcacaatt tgggctgggt ttccatcctg 120
ccgccgctgg cggggatgct ggtgcagccg attgtcggcc attactccga ccgcacttgg 180
aagccgcgtt tggggcgccg ccgtctgccc tatctgcttt atggcacgct gattgcgggt 240
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cagccgttta agatgatggt cggcgacatg gtcaacgagg agcagaaagg ctacgcctac 420
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tttgcgata tcggtttggc gaacaccgcc gagaaaggcg ttgtgccgca gaccgtggtc 540
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caggaaaaag ccaactggat cgaactcttg aaaaccgcgc ctaaggcggt ttggacgggt 720
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ctgattaaag aaacacacgg cggggtttga 1290

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<210> 568

<211> 429

<212> PRT

<213> *Neisseria meningitidis*

<400> 568

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Ser Ser Gln Met Ser Arg Ile Phe Gln Thr Leu Gly Ala Asp Pro His
  20           25           30

Asn Leu Gly Trp Phe Phe Ile Leu Pro Pro Leu Ala Gly Met Leu Val
  35           40           45

Gln Pro Ile Val Gly His Tyr Ser Asp Arg Thr Trp Lys Pro Arg Leu
  50           55           60

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Gly Gly Arg Arg Leu Pro Tyr Leu Leu Tyr Gly Thr Leu Ile Ala Val
 65 70 75 80

Ile Val Met Ile Leu Met Pro Asn Ser Gly Ser Phe Gly Phe Gly Tyr
 85 90 95

Ala Ser Leu Ala Ala Leu Ser Phe Gly Ala Leu Met Ile Ala Leu Leu
 100 105 110

Asp Val Ser Ser Asn Met Ala Met Gln Pro Phe Lys Met Met Val Gly
 115 120 125

Asp Met Val Asn Glu Glu Gln Lys Gly Tyr Ala Tyr Gly Ile Gln Ser
 130 135 140

Phe Leu Ala Asn Thr Gly Ala Val Val Ala Ala Ile Leu Pro Phe Val
 145 150 155 160

Phe Ala Tyr Ile Gly Leu Ala Asn Thr Ala Glu Lys Gly Val Val Pro
 165 170 175

Gln Thr Val Val Val Ala Phe Tyr Val Gly Ala Ala Leu Leu Val Ile
 180 185 190

Thr Ser Ala Phe Thr Ile Phe Lys Val Lys Glu Tyr Asp Pro Glu Thr
 195 200 205

Tyr Ala Arg Tyr His Gly Ile Asp Val Ala Ala Asn Gln Glu Lys Ala
 210 215 220

Asn Trp Ile Glu Leu Leu Lys Thr Ala Pro Lys Ala Phe Trp Thr Val
 225 230 235 240

Thr Leu Val Gln Phe Phe Cys Trp Phe Ala Phe Gln Tyr Met Trp Thr
 245 250 255

Tyr Ser Ala Gly Ala Ile Ala Glu Asn Val Trp His Thr Thr Asp Ala
 260 265 270

Ser Ser Val Gly Tyr Gln Glu Ala Gly Asn Trp Tyr Gly Val Leu Ala
 275 280 285

Ala Val Gln Ser Val Ala Ala Val Ile Cys Ser Phe Val Leu Ala Lys
 290 295 300

Val Pro Asn Lys Tyr His Lys Ala Gly Tyr Phe Gly Cys Leu Ala Leu
 305 310 315 320

Gly Ala Leu Gly Phe Phe Ser Val Phe Phe Ile Gly Asn Gln Tyr Ala
 325 330 335

Leu Val Leu Ser Tyr Thr Leu Ile Gly Ile Ala Trp Ala Gly Ile Ile
 340 345 350

Thr Tyr Pro Leu Thr Ile Val Thr Asn Ala Leu Ser Gly Lys His Met
 355 360 365

Gly Thr Tyr Leu Gly Leu Phe Asn Gly Ser Ile Cys Met Pro Gln Ile
370 375 380

Val Ala Ser Leu Leu Ser Phe Val Leu Phe Pro Met Leu Gly Gly Leu
385 390 395 400

Gln Ala Thr Met Phe Leu Val Gly Gly Val Val Leu Leu Leu Gly Ala
405 410 415

Phe Ser Val Phe Leu Ile Lys Glu Thr His Gly Gly Val
420 425

<210> 569
<211> 1290
<212> DNA
<213> Neisseria meningitidis

<400> 569
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ccgccgctgg cgggggatgct ggtgcagccg attgtcggcc attactccga ccgcacttgg 180
aagccgcggt tgggcggccg ccgtctgccg tatctgcttt atggcacgct gattgcgggt 240
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gctttgtcgt tggcgcgct gatgattgcg ctgttagacg tgcgtcaaa tatggcgatg 360
cagccgttta agatgatggt cggcgacatg gtcaacgagg agcagaaagg ctacgcctac 420
gggattcaaa gtttcttagc gaatacgggc gcggtcgtgg cggcgattct gccgtttgtg 480
tttgcgtata tcggtttggc gaacaccgcc gagaaaggcg ttgtgccgca gaccgtggtc 540
gtggcgcttt atgtgggtgc ggcgttgctg gtgattacca gcgcgttcac gattttcaaa 600
gtgaaggaat acaatccgga aacctacgcc cgttaccacg gcacgatgt gcgcgcgaat 660
caggaaaaag ccaactggat cgaactcttg aaaaccgcgc ctaaggcggt ttggacgggt 720
actttggtgc aattcttctg ctggttcgcc ttccaatata tgtggactta ctccggcaggc 780
gcgattgcgg aaaacgtctg gcacaccacc gatgcgtctt ccgtaggtta tcaggaggcg 840
ggtaactggt acggcgtttt ggcggcggtg cagtcgggtg cggcggtgat ttgttcgttt 900
gtattggcga aagtgccgaa taaataccat aaggcgggtt atttcggctg tttggctttg 960
ggcgcgctcg gctttttctc cgttttcttc atcggaacc aatacgcgt ggtgttgtct 1020
tataccttaa tggcgcgcgc ttgggcgggc attatcactt atccgctgac gattgtgacc 1080
aacgccttgt cgggcaagca tatgggcact tacttgggccc tgtttaacgg ctctatctgt 1140
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caggccacta tgttcttggg agggggcgtc gtcctgctgc tgggcgcggt ttccgtgttc 1260
ctgattaaag aaacacacgg cggggtttga 1290

<210> 570
<211> 429
<212> PRT
<213> Neisseria meningitidis

<400> 570
Met Leu Ser Phe Gly Phe Leu Gly Val Gln Thr Ala Phe Thr Leu Gln
1 5 10 15

Ser Ser Gln Met Ser Arg Ile Phe Gln Thr Leu Gly Ala Asp Pro His
20 25 30

Ser Leu Gly Trp Phe Phe Ile Leu Pro Pro Leu Ala Gly Met Leu Val

35

40

45

Gln Pro Ile Val Gly His Tyr Ser Asp Arg Thr Trp Lys Pro Arg Leu
 50 55 60
 Gly Gly Arg Arg Leu Pro Tyr Leu Leu Tyr Gly Thr Leu Ile Ala Val
 65 70 75 80
 Ile Val Met Ile Leu Met Pro Asn Ser Gly Ser Phe Gly Phe Gly Tyr
 85 90 95
 Ala Ser Leu Ala Ala Leu Ser Phe Gly Ala Leu Met Ile Ala Leu Leu
 100 105 110
 Asp Val Ser Ser Asn Met Ala Met Gln Pro Phe Lys Met Met Val Gly
 115 120 125
 Asp Met Val Asn Glu Glu Gln Lys Gly Tyr Ala Tyr Gly Ile Gln Ser
 130 135 140
 Phe Leu Ala Asn Thr Gly Ala Val Val Ala Ala Ile Leu Pro Phe Val
 145 150 155 160
 Phe Ala Tyr Ile Gly Leu Ala Asn Thr Ala Glu Lys Gly Val Val Pro
 165 170 175
 Gln Thr Val Val Val Ala Phe Tyr Val Gly Ala Ala Leu Leu Val Ile
 180 185 190
 Thr Ser Ala Phe Thr Ile Phe Lys Val Lys Glu Tyr Asn Pro Glu Thr
 195 200 205
 Tyr Ala Arg Tyr His Gly Ile Asp Val Ala Ala Asn Gln Glu Lys Ala
 210 215 220
 Asn Trp Ile Glu Leu Leu Lys Thr Ala Pro Lys Ala Phe Trp Thr Val
 225 230 235 240
 Thr Leu Val Gln Phe Phe Cys Trp Phe Ala Phe Gln Tyr Met Trp Thr
 245 250 255
 Tyr Ser Ala Gly Ala Ile Ala Glu Asn Val Trp His Thr Thr Asp Ala
 260 265 270
 Ser Ser Val Gly Tyr Gln Glu Ala Gly Asn Trp Tyr Gly Val Leu Ala
 275 280 285
 Ala Val Gln Ser Val Ala Ala Val Ile Cys Ser Phe Val Leu Ala Lys
 290 295 300
 Val Pro Asn Lys Tyr His Lys Ala Gly Tyr Phe Gly Cys Leu Ala Leu
 305 310 315 320
 Gly Ala Leu Gly Phe Phe Ser Val Phe Phe Ile Gly Asn Gln Tyr Ala
 325 330 335

Leu Val Leu Ser Tyr Thr Leu Ile Gly Ile Ala Trp Ala Gly Ile Ile
 340 345 350
 Thr Tyr Pro Leu Thr Ile Val Thr Asn Ala Leu Ser Gly Lys His Met
 355 360 365
 Gly Thr Tyr Leu Gly Leu Phe Asn Gly Ser Ile Cys Met Pro Gln Ile
 370 375 380
 Val Ala Ser Leu Leu Ser Phe Val Leu Phe Pro Met Leu Gly Gly Leu
 385 390 395 400
 Gln Ala Thr Met Phe Leu Val Gly Gly Val Val Leu Leu Leu Gly Ala
 405 410 415
 Phe Ser Val Phe Leu Ile Lys Glu Thr His Gly Gly Val
 420 425

<210> 571
 <211> 612
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 571
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 tatgtgctgt ccaaccggcg tggtagctgc gtcttcgtgc tggacttggg cgggattgtg 120
 caggaatttt ccgttttggc agacggcgtg cgcgaaaacc ccgtggtgtc gttcgacgat 180
 gcggcttcct atgcggacaa tccgtttcag attaacaagc agatagggcg cgtggccgga 240
 cgcattccgcg gtgcggcggt cgacatcaac ggtaggactt accgcgtgga ggccaacgaa 300
 ggcaggaacg cgctgcacgg cggttcgcac gggctggccg ttaccggtt caacgcggtg 360
 gcggcagacg gccgacgggt atcccaacga tttggatatt tcctaccgct tggacgagga 420
 cggccgggctt accgttacct atcgcgccac cgcgctcggc gacacggtgt tcgaccgcac 480
 gctgcacatt tactggcggc tggacgcggg cctgcacgat gcggttctgc atattccgca 540
 gggcggacat attccggccg atgccgaaaa actgcccgtc ttaacggttt cagacggcct 600
 cgaagtattt ga 612

<210> 572
 <211> 203
 <212> PRT
 <213> Neisseria gonorrhoeae

<400> 572
 Met Ser Asp Thr Pro Ala Thr Arg Asp Phe Gly Leu Ile Asp Gly Arg
 1 5 10 15
 Ala Val Thr Gly Tyr Val Leu Ser Asn Arg Arg Gly Thr Cys Val Phe
 20 25 30
 Val Leu Asp Leu Gly Gly Ile Val Gln Glu Phe Ser Val Leu Ala Asp
 35 40 45
 Gly Val Arg Glu Asn Pro Val Val Ser Phe Asp Asp Ala Ala Ser Tyr
 50 55 60

Ala Asp Asn Pro Phe Gln Ile Asn Lys Gln Ile Gly Arg Val Ala Gly
65 70 75 80

Arg Ile Arg Gly Ala Ala Phe Asp Ile Asn Gly Arg Thr Tyr Arg Val
85 90 95

Glu Ala Asn Glu Gly Arg Asn Ala Leu His Gly Gly Ser His Gly Leu
100 105 110

Ala Val Thr Arg Phe Asn Ala Val Ala Ala Asp Gly Arg Arg Leu Ser
115 120 125

Gln Arg Phe Gly Tyr Phe Leu Pro Leu Gly Arg Gly Arg Pro Ala Tyr
130 135 140

Arg Tyr Leu Ser Arg His Arg Ala Arg Arg His Gly Val Arg Pro Asp
145 150 155 160

Ala Ala His Leu Leu Ala Ala Gly Arg Gly Pro Ala Arg Cys Gly Ser
165 170 175

Ala Tyr Ser Ala Gly Arg Thr Tyr Ser Gly Arg Cys Arg Lys Thr Ala
180 185 190

Arg Leu Asn Gly Phe Arg Arg Pro Arg Ser Ile
195 200

<210> 573

<211> 657

<212> DNA

<213> Neisseria meningitidis

<400> 573

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caggaatttt ccgttttggc agacggcggt cgcgaaaacc tcgtggtgtc gttcgatgat 180
gcggcttcct atgcggacaa tccgtttcag attaacaac agatagggcg cgtggccgga 240
cgcatccgcg gtgcggcggt cgacatcaac ggcaggactt accgcgtgga ggccaacgaa 300
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gcggcagacg gccgttcggt ggtgctgcgc agccgcctgg caacagtcgg ccgacgggta 420
tcccaacgat ttggatttgg atatttccta ccgcttggac gaggacgacc ggcttaccgt 480
tacctatcgc gccaccgcgc tcggcgacac ggtgttcgac ccgacgctgc acatttactg 540
gcggctggac gcgggcctgc acgatgcggt tctgcatatt ccgcagggcg gacatatgcc 600
ggccgatgcc gaaaaactgc ccgtctcaac ggtttcagac gacctcgaag tatttga 657

<210> 574

<211> 218

<212> PRT

<213> Neisseria meningitidis

<400> 574

Met Ser Asp Thr Pro Ala Thr Arg Asp Phe Gly Leu Ile Asp Gly Arg
1 5 10 15

Ala Val Thr Gly Tyr Val Leu Ser Asn Arg Arg Gly Thr Arg Val Cys

20 25 30
 Val Leu Asp Leu Gly Gly Ile Val Gln Glu Phe Ser Val Leu Ala Asp
 35 40 45
 Gly Val Arg Glu Asn Leu Val Val Ser Phe Asp Asp Ala Ala Ser Tyr
 50 55 60
 Ala Asp Asn Pro Phe Gln Ile Asn Lys Gln Ile Gly Arg Val Ala Gly
 65 70 75 80
 Arg Ile Arg Gly Ala Ala Phe Asp Ile Asn Gly Arg Thr Tyr Arg Val
 85 90 95
 Glu Ala Asn Glu Gly Arg Asn Ala Leu His Gly Gly Ser His Gly Leu
 100 105 110
 Ala Val Thr Arg Phe Asn Ala Val Ala Ala Asp Gly Arg Ser Val Val
 115 120 125
 Leu Arg Ser Arg Leu Ala Thr Val Gly Arg Arg Leu Ser Gln Arg Phe
 130 135 140
 Gly Phe Gly Tyr Phe Leu Pro Leu Gly Arg Gly Arg Pro Ala Tyr Arg
 145 150 155 160
 Tyr Leu Ser Arg His Arg Ala Arg Arg His Gly Val Arg Pro Asp Ala
 165 170 175
 Ala His Leu Leu Ala Ala Gly Arg Gly Pro Ala Arg Cys Gly Ser Ala
 180 185 190
 Tyr Ser Ala Gly Arg Thr Tyr Ala Gly Arg Cys Arg Lys Thr Ala Arg
 195 200 205
 Leu Asn Gly Phe Arg Arg Pro Arg Ser Ile
 210 215

<210> 575

<211> 656

<212> DNA

<213> Neisseria meningitidis

<400> 575

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 caggaatttt ccgttttggc agacggcggtg cgcgaaaacc tcgtggtgtc gttcgacgat 180
 gcggttcct atgcggacaa tccgtttcag attaacaagc agatagggcg cgtggccgga 240
 cgcacccgcg gtgcggcggt cgacatcaac ggcaggactt accgcgtgga ggccaacgaa 300
 ggcaggaacg cgctgcacgg cggttcgcac gggctggccg ttaccggtt caacgcggtg 360
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 acctatcgcg ccaccgcgct cggcgacacg gtgttcgacc cgacgctgca catttactgg 540
 cggctggacg cgggcctgca cgatgcggtt ctgcatattc cgcagggcgg acatattccg 600
 gccgatgccg aaaaactgcc cgtotcaacg gtttcagacg acctcgaagt atttga 656

<210> 576
<211> 218
<212> PRT
<213> Neisseria meningitidis

<400> 576
Met Ser Asp Thr Pro Ala Thr Arg Asp Phe Gly Leu Ile Asp Gly Arg
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Ala Val Thr Gly Tyr Val Leu Ser Asn Arg Arg Gly Thr Arg Val Cys
20 25 30

Val Leu Asp Leu Gly Gly Ile Val Gln Glu Phe Ser Val Leu Ala Asp
35 40 45

Gly Val Arg Glu Asn Leu Val Val Ser Phe Asp Asp Ala Ala Ser Tyr
50 55 60

Ala Asp Asn Pro Phe Gln Ile Asn Lys Gln Ile Gly Arg Val Ala Gly
65 70 75 80

Arg Ile Arg Gly Ala Ala Phe Asp Ile Asn Gly Arg Thr Tyr Arg Val
85 90 95

Glu Ala Asn Glu Gly Arg Asn Ala Leu His Gly Gly Ser His Gly Leu
100 105 110

Ala Val Thr Arg Phe Asn Ala Val Ala Ala Asp Gly Arg Ser Val Val
115 120 125

Leu Arg Ser Arg Leu Xaa Thr Val Gly Arg Arg Leu Ser Gln Arg Phe
130 135 140

Gly Phe Gly Tyr Phe Leu Pro Leu Gly Arg Gly Arg Pro Ala Tyr Arg
145 150 155 160

Tyr Leu Ser Arg His Arg Ala Arg Arg His Gly Val Arg Pro Asp Ala
165 170 175

Ala His Leu Leu Ala Ala Gly Arg Gly Pro Ala Arg Cys Gly Ser Ala
180 185 190

Tyr Ser Ala Gly Arg Thr Tyr Ser Gly Arg Cys Arg Lys Thr Ala Arg
195 200 205

Leu Asn Gly Phe Arg Arg Pro Arg Ser Ile
210 215

<210> 577
<211> 639
<212> DNA
<213> Neisseria gonorrhoeae

<400> 577

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 gataccgaca gcttcgggca ggcggttgcg aacctgcgcc gcgccctgaa cgtcgatttc 240
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<210> 578

<211> 212

<212> PRT

<213> Neisseria gonorrhoeae

<400> 578

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Pro Pro Leu Asp Asn Phe Pro Thr Val Arg Pro Ala Pro Phe Glu Ala
 35 40 45

Arg Gly Lys His Val Glu Arg Arg Arg Gln Asp Lys Asp Thr Asp Ser
 50 55 60

Phe Arg Gln Arg Val Ala Asn Leu Arg Arg Ala Leu Asn Val Asp Phe
 65 70 75 80

Gln Asn His Val Ile Ala Cys Arg Arg Gln Arg Ile His Ala Leu Arg
 85 90 95

Ala Cys Ala Val Ile Val Ala Glu Tyr Val Cys Val Phe Gln Lys Ser
 100 105 110

Leu Leu Arg Asp Lys Arg Phe Lys Leu Phe Phe Gly Asn Lys Val Ile
 115 120 125

Met Tyr Ala Val Cys Phe Ala Phe Thr Arg Arg Ala Arg Arg Met Arg
 130 135 140

His Gly Asn Ala Gln Thr Val Met Val Cys Gln Gln Pro Arg His Gln
 145 150 155 160

Arg Gly Phe Ala Arg Ala Gly Ser Gly Arg Asn Asp Lys Asp Val Ala
 165 170 175

Phe Ser Ile Ser Gly His Ile Phe Tyr Leu Tyr Ile Phe Gln Pro Ile
 180 185 190

Val Ser Gln Arg Thr Pro Tyr Phe Ile Phe Ala Asp Ala His Ile Leu
 195 200 205

Pro Leu Leu Phe
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<210> 579
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<212> DNA
<213> Neisseria meningitidis

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ctcttctttg gaaacaaagt gataatgtac gccgtttgct tcgccttcac gcggcgggcg 420
cgtcgtgtgc gacacggaaa cgcgcaaacc gttatggttt gccaacagcc gcgacaccag 480
cgtggttttg ccggtgccgg aagcggccga aatgataaag atgttgcctt ttcgataaagc 540
ggacatattt tttacctgta tttttccag ccgattgtat cacaatggac acccagtttc 600
ctatttgcgg atgcccata tttgcgcta ttgtttga 639

<210> 580
<211> 212
<212> PRT
<213> Neisseria meningitidis

<400> 580
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Lys Val Lys Gln Tyr Gly Leu Leu Asp Phe Met Pro Cys Leu Arg Gln
20 25 30
Pro Pro Leu Asp Asn Phe Pro Thr Val Arg Pro Ala Ser Val Glu Ala
35 40 45
Arg Gly Lys Tyr Val Glu Arg Arg Arg Gln Asp Lys Asp Ala Asp Gly
50 55 60
Phe Gly Gln Arg Val Ala Asn Leu Arg Arg Ala Leu Asn Val Asp Phe
65 70 75 80
Gln Asn His Val Ile Ala Cys Arg Arg Gln Arg Ile His Thr Leu Arg
85 90 95
Ala Cys Ala Val Ile Val Ala Lys Tyr Val Gly Val Phe Gln Lys Ser
100 105 110
Phe Leu Arg Asp Lys Arg Leu Lys Leu Phe Phe Gly Asn Lys Val Ile
115 120 125
Met Tyr Ala Val Cys Phe Ala Phe Thr Arg Arg Ala Arg Arg Val Arg
130 135 140

His Gly Asn Ala Gln Thr Val Met Val Cys Gln Gln Pro Arg His Gln
 145 150 155 160
 Arg Gly Phe Ala Arg Ala Gly Ser Gly Arg Asn Asp Lys Asp Val Ala
 165 170 175
 Phe Ser Ile Ser Gly His Ile Phe Tyr Leu Tyr Ile Phe Gln Pro Ile
 180 185 190
 Val Ser Gln Trp Thr Pro Ser Phe Leu Phe Ala Asp Ala His Ile Leu
 195 200 205
 Pro Leu Leu Phe
 210

<210> 581
 <211> 639
 <212> DNA
 <213> Neisseria meningitidis

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 gatgccgacg gcttcgggca gcgcattctcg aacctgagcc gcgccctgaa cgtcgatttc 240
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 ctcttctttg gaaacaaagt gataatgtac gccgtttgct tcgccttcac gcggcgagc 420
 cgtcgtgtgc gacacgaaa cgcgcaaacc gttatggttt gccaacagcc gcgacaccag 480
 cgtggttttg cccgtgccgg aagcggccga aatgataaag atgttgccct ttcgataagc 540
 ggacatattt ttacctgta tttttccag ccgattgtat cacaacggac acccggtttc 600
 ctatttgccg atgcccatat ttgcccgtta ttgtttga 639

<210> 582
 <211> 212
 <212> PRT
 <213> Neisseria meningitidis

<400> 582
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 20 25 30
 Pro Pro Leu Asp Asn Phe Pro Thr Val Arg Pro Ala Ser Val Glu Thr
 35 40 45
 Arg Ser Lys His Ile Glu Arg Arg Arg Gln Asp Lys Asp Ala Asp Gly
 50 55 60
 Phe Gly Gln Arg Ile Ser Asn Leu Ser Arg Ala Leu Asn Val Asp Phe
 65 70 75 80

Thr Glu Gln Ser Val Gly Leu Glu Thr Val Ser Val Val Gly Lys Ser
35 40 45

Arg Pro Arg Ala Thr Ser Gly Leu Leu His Thr Ser Thr Ala Ser Asp
50 55 60

Lys Ile Ile Ser Gly Asp Thr Leu Arg Gln Lys Ala Val Asn Leu Gly
65 70 75 80

Asp Ala Leu Asp Gly Val Pro Gly Ile His Ala Ser Gln Tyr Gly Gly
85 90 95

Gly Ala Ser Ala Pro Val Ile Arg Gly Gln Thr Gly Arg Arg Ile Lys
100 105 110

Val Leu Asn His His Gly Glu Thr Gly Asp Met Ala Asp Phe Ser Pro
115 120 125

Asp His Ala Ile Met Val Asp Thr Ala Leu Ser Gln Gln Val Glu Ile
130 135 140

Leu Arg Gly Pro Val Thr Leu Leu Tyr Ser Ser Gly Asn Val Ala Gly
145 150 155 160

Ala Gly Gln Cys Cys Arg Trp Lys Asn Pro Pro Lys Asn Ala
165 170

<210> 585
<211> 2205
<212> DNA
<213> Neisseria meningitidis

<400> 585
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<210> 586

<211> 735

<212> PRT

<213> Neisseria meningitidis

<400> 586

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Ala Ser Asp Lys Ile Ile Ser Gly Asp Thr Leu Arg Gln Lys Ala Val
          35                      40                      45

Asn Leu Gly Asp Ala Leu Asp Gly Val Pro Gly Ile His Ala Ser Gln
          50                      55                      60

Tyr Gly Gly Gly Ala Ser Ala Pro Val Ile Arg Gly Gln Thr Gly Arg
          65                      70                      75                      80

Arg Ile Lys Val Leu Asn His His Gly Glu Thr Gly Asp Met Ala Asp
          85                      90                      95

Phe Ser Pro Asp His Ala Ile Met Val Asp Thr Ala Leu Ser Gln Gln
          100                     105                     110

Val Glu Ile Leu Arg Gly Pro Val Thr Leu Leu Tyr Ser Ser Gly Asn
          115                     120                     125

Val Ala Gly Leu Val Asp Val Ala Asp Gly Lys Ile Pro Glu Lys Met
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Pro Glu Asn Gly Val Ser Gly Glu Leu Gly Leu Arg Leu Ser Ser Gly
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Asn Leu Glu Lys Leu Thr Ser Gly Gly Ile Asn Ile Gly Leu Gly Lys
          165                     170                     175

Asn Phe Val Leu His Thr Glu Gly Leu Tyr Arg Lys Ser Gly Asp Tyr

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Ala His Ser His Glu Tyr Asp Asp Cys His Ala Asp Ile Ile Trp Gln 245 250 255		
Lys Ser Leu Ile Asn Lys Arg Tyr Leu Gln Leu Tyr Pro His Leu Leu 260 265 270		
Thr Glu Glu Asp Ile Asp Tyr Asp Asn Pro Gly Leu Ser Cys Gly Phe 275 280 285		
His Asp Asp Asp Asn Ala His Ala His Thr His Ser Gly Arg Pro Trp 290 295 300		
Ile Asp Leu Arg Asn Lys Arg Tyr Glu Leu Arg Ala Glu Trp Lys Gln 305 310 315 320		
Pro Phe Pro Gly Phe Glu Ala Leu Arg Val His Leu Asn Arg Asn Asp 325 330 335		
Tyr Arg His Asp Glu Lys Ala Gly Asp Ala Val Glu Asn Phe Phe Asn 340 345 350		
Asn Gln Thr Gln Asn Ala Arg Ile Glu Leu Arg His Gln Pro Ile Gly 355 360 365		
Arg Leu Lys Gly Ser Trp Gly Val Gln Tyr Leu Gln Gln Lys Ser Ser 370 375 380		
Ala Leu Ser Ala Ile Ser Glu Ala Val Lys Gln Pro Met Leu Leu Asp 385 390 395 400		
Asn Lys Val Gln His Tyr Ser Phe Phe Gly Val Glu Gln Ala Asn Trp 405 410 415		
Asp Asn Phe Thr Leu Glu Gly Gly Val Arg Val Glu Lys Gln Lys Ala 420 425 430		
Ser Ile Gln Tyr Asp Lys Ala Leu Ile Asp Arg Glu Asn Tyr Tyr Asn 435 440 445		
His Pro Leu Pro Asp Leu Gly Ala His Arg Gln Thr Ala Arg Ser Phe 450 455 460		
Ala Leu Ser Gly Asn Trp Tyr Phe Thr Pro Gln His Lys Leu Ser Leu 465 470 475 480		
Thr Ala Ser His Gln Glu Arg Leu Pro Ser Thr Gln Glu Leu Tyr Ala		


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<210> 588

<211> 764

<212> PRT

<213> *Neisseria meningitidis*

<400> 588

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      20              25              30

Thr Glu Gln Ser Val Gly Leu Glu Thr Val Ser Val Val Gly Lys Ser
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Arg Pro Arg Ala Thr Ser Gly Leu Leu His Thr Ser Thr Ala Ser Asp
      50              55              60

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Val	Leu	Asn	His	His	Gly	Glu	Thr	Gly	Asp	Met	Ala	Asp	Phe	Ser	Pro	
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Ala	Ala	Tyr	Ser	Asp	Arg	Arg	Asp	Gln	Tyr	Gly	Leu	Pro	Ala	His	Ser	
			260					265					270			
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	275						280					285				
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Asp	Asp	Ala	His	Ala	His	Ala	His	Asn	Gly	Lys	Pro	Trp	Ile	Asp	Leu	
			325						330					335		
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Gln	Asn	Ala	Arg	Ile	Glu	Leu	Arg	His	Gln	Pro	Ile	Gly	Arg	Leu	Lys	385	390	395
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Gln	His	Tyr	Ser	Phe	Phe	Gly	Val	Glu	Gln	Ala	Asn	Trp	Asp	Asn	Phe	435	440	445
Thr	Leu	Glu	Gly	Gly	Val	Arg	Val	Glu	Lys	Gln	Lys	Ala	Ser	Ile	Arg	450	455	460
Tyr	Asp	Lys	Ala	Leu	Ile	Asp	Arg	Glu	Asn	Tyr	Tyr	Asn	His	Pro	Leu	465	470	475
Pro	Asp	Leu	Gly	Ala	His	Arg	Gln	Thr	Ala	Arg	Ser	Phe	Ala	Leu	Ser	485	490	495
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His	Val	Ala	Thr	Asn	Thr	Phe	Glu	Val	Gly	Asn	Lys	His	Leu	Asn	Lys	530	535	540
Glu	Arg	Ser	Asn	Asn	Ile	Glu	Leu	Ala	Leu	Gly	Tyr	Glu	Gly	Asp	Arg	545	550	555
Trp	Gln	Tyr	Asn	Leu	Ala	Leu	Tyr	Arg	Asn	Arg	Phe	Gly	Asn	Tyr	Ile	565	570	575
Tyr	Ala	Gln	Thr	Leu	Asn	Asp	Gly	Arg	Gly	Pro	Lys	Ser	Ile	Glu	Asp	580	585	590
Asp	Ser	Glu	Met	Lys	Leu	Val	Arg	Tyr	Asn	Gln	Ser	Gly	Ala	Asp	Phe	595	600	605
Tyr	Gly	Ala	Glu	Gly	Glu	Ile	Tyr	Phe	Lys	Pro	Thr	Pro	Arg	Tyr	Arg	610	615	620
Ile	Gly	Val	Ser	Gly	Asp	Tyr	Val	Arg	Gly	Arg	Leu	Lys	Asn	Leu	Pro	625	630	635
Ser	Leu	Pro	Gly	Arg	Glu	Asp	Ala	Tyr	Gly	Asn	Arg	Pro	Leu	Ile	Ala	645	650	655
Gln	Ala	Asp	Gln	Asn	Ala	Pro	Arg	Val	Pro	Ala	Ala	Arg	Leu	Gly	Val	660	665	670

His Leu Lys Ala Ser Leu Thr Asp Arg Ile Asp Ala Asn Leu Asp Tyr
675 680 685

Tyr Arg Val Phe Ala Gln Asn Lys Leu Ala Arg Tyr Glu Thr Arg Thr
690 695 700

Pro Gly His His Met Leu Asn Leu Gly Ala Asn Tyr Arg Arg Asn Thr
705 710 715 720

Arg Tyr Gly Glu Trp Asn Trp Tyr Val Lys Ala Asp Asn Leu Leu Asn
725 730 735

Gln Ser Val Tyr Ala His Ser Ser Phe Leu Ser Asp Thr Pro Gln Met
740 745 750

Gly Arg Ser Phe Thr Gly Gly Val Asn Val Lys Phe
755 760

<210> 589

<211> 600

<212> DNA

<213> Neisseria gonorrhoeae

<400> 589

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ttccacgaca tcacgcccgt cctgcaaagt gcggaatact tccgcctttt ggtcgatttg 180
ctggttttacc gctatatgga tcagaaaatc gacatcggtg ccggcttgga cgcgcgcggc 240
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aaaggcaagc tgccttttga aaccgtatcg caaagctacg cgctcgaata cggggaagct 360
gcgggtggaaa tccacaccga tgcggtcaaa cccggttcgc gcgtcctgct ggtcgatgat 420
ttggtttgcca cgggcggcac aatgcttgcc gggcttgaac tgatccgcaa actcggcggg 480
gaaattgtcg aagccgcgc catttttgaa ttaccgacc ttcaaggcgg caagaatata 540
cgcgcaagtg gcgcgccctt atttaccctg cttcaaaacg aaggctgcat gaaaggctga 600

<210> 590

<211> 199

<212> PRT

<213> Neisseria gonorrhoeae

<400> 590

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Glu Ala Met Ser Val Gly Ala Leu Ala Asp Lys Ile Arg Lys Ile Glu
20 25 30

Asn Trp Pro Gln Lys Gly Ile Leu Phe His Asp Ile Thr Pro Val Leu
35 40 45

Gln Ser Ala Glu Tyr Phe Arg Leu Leu Val Asp Leu Leu Val Tyr Arg
50 55 60

Tyr Met Asp Gln Lys Ile Asp Ile Val Ala Gly Leu Asp Ala Arg Gly

65	70	75	80
Phe Ile Ile Gly Ala Ala Leu Ala Tyr Gln Leu Asn Val Gly Phe Val	85	90	95
Pro Ile Arg Lys Lys Gly Lys Leu Pro Phe Glu Thr Val Ser Gln Ser	100	105	110
Tyr Ala Leu Glu Tyr Gly Glu Ala Ala Val Glu Ile His Thr Asp Ala	115	120	125
Val Lys Pro Gly Ser Arg Val Leu Leu Val Asp Asp Leu Val Ala Thr	130	135	140
Gly Gly Thr Met Leu Ala Gly Leu Glu Leu Ile Arg Lys Leu Gly Gly	145	150	155
Glu Ile Val Glu Ala Ala Ala Ile Leu Glu Phe Thr Asp Leu Gln Gly	165	170	175
Gly Lys Asn Ile Arg Ala Ser Gly Ala Pro Leu Phe Thr Leu Leu Gln	180	185	190
Asn Glu Gly Cys Met Lys Gly	195		

<210> 591
 <211> 600
 <212> DNA
 <213> Neisseria meningitidis

<400> 591
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 ttccacgaca tcacgccgt ccttcaaagc gcggaatact tccgcctttt gggttgattta 180
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 ttcattatcg gcgcggcact cgcctaccag ctcaacgtcg gtttcgtccc catccgcaaa 300
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 gcggtggaaa tccacaccga tgccgtcaaa ctcggttcgc gcgtgctgct ggtcgatgat 420
 ttgattgcca cgggcggcac gatgcttgcc ggactggaac tgatccgcaa actcggcgga 480
 gaaattgtcg aagccgcgc cattttggaa ttaccgacc ttcaaggcgg caagaatatc 540
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<210> 592
 <211> 199
 <212> PRT
 <213> Neisseria meningitidis

<400> 592
Met Ala Leu Lys Thr Ser Asn Leu Glu His Ala Met Leu Val His Pro
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Glu Ala Met Ser Val Gly Ala Leu Ala Asp Lys Ile Arg Lys Ile Glu
20 25 30

Asn Trp Pro Gln Lys Gly Ile Leu Phe His Asp Ile Thr Pro Val Leu
 35 40 45
 Gln Ser Ala Glu Tyr Phe Arg Leu Leu Val Asp Leu Leu Val Tyr Arg
 50 55 60
 Tyr Met Asp Gln Lys Ile Asp Ile Val Ala Gly Leu Asp Ala Arg Gly
 65 70 75 80
 Phe Ile Ile Gly Ala Ala Leu Ala Tyr Gln Leu Asn Val Gly Phe Val
 85 90 95
 Pro Ile Arg Lys Lys Gly Lys Leu Pro Phe Glu Thr Val Ser Gln Ser
 100 105 110
 Tyr Ala Leu Glu Tyr Gly Glu Ala Ala Val Glu Ile His Thr Asp Ala
 115 120 125
 Val Lys Leu Gly Ser Arg Val Leu Leu Val Asp Asp Leu Ile Ala Thr
 130 135 140
 Gly Gly Thr Met Leu Ala Gly Leu Glu Leu Ile Arg Lys Leu Gly Gly
 145 150 155 160
 Glu Ile Val Glu Ala Ala Ala Ile Leu Glu Phe Thr Asp Leu Gln Gly
 165 170 175
 Gly Lys Asn Ile Arg Ala Ser Gly Ala Pro Leu Phe Thr Leu Leu Gln
 180 185 190
 Asn Glu Gly Cys Met Lys Gly
 195

<210> 593
 <211> 600
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 593
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 ttccacgaca tcacgcccgt cctgcaaagc gcggaatact tccgactttt ggttgattta 180
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 ttggttgcca cgggcggcac gatgcttgcc ggactggagc tgatccgcaa actcggcggg 480
 gaaattgtcg aagccgccc ctttttgaa tttaccgacc ttcaaggcgg caagaatatc 540
 cgtgcaagcg gcgcgccctt atttaccctg cttcaaaacg aaggctgtat gaagggtga 600

<210> 594
 <211> 199
 <212> PRT
 <213> *Neisseria meningitidis*

<400> 594

Met Ala Leu Lys Thr Ser Asn Leu Glu His Ala Met Leu Val His Pro
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Glu Ala Met Ser Val Gly Ala Leu Ala Asp Lys Ile Arg Lys Ile Glu
20 25 30

Asn Trp Pro Gln Lys Gly Ile Leu Phe His Asp Ile Thr Pro Val Leu
35 40 45

Gln Ser Ala Glu Tyr Phe Arg Leu Leu Val Asp Leu Leu Val Tyr Arg
50 55 60

Tyr Met Asp Gln Lys Ile Asp Ile Val Ala Gly Leu Asp Ala Arg Gly
65 70 75 80

Phe Ile Ile Gly Ala Ala Leu Ala Tyr Gln Leu Asn Val Gly Phe Val
85 90 95

Pro Ile Arg Lys Lys Gly Lys Leu Pro Phe Glu Thr Val Ser Gln Ser
100 105 110

Tyr Ala Leu Glu Tyr Gly Glu Ala Ala Val Glu Ile His Thr Asp Ala
115 120 125

Val Lys Leu Gly Ser Arg Val Leu Leu Val Asp Asp Leu Val Ala Thr
130 135 140

Gly Gly Thr Met Leu Ala Gly Leu Glu Leu Ile Arg Lys Leu Gly Gly
145 150 155 160

Glu Ile Val Glu Ala Ala Ala Ile Leu Glu Phe Thr Asp Leu Gln Gly
165 170 175

Gly Lys Asn Ile Arg Ala Ser Gly Ala Pro Leu Phe Thr Leu Leu Gln
180 185 190

Asn Glu Gly Cys Met Lys Gly
195

<210> 595

<211> 1020

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 595

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gacaaagcat tgattgatcg agaaaactac tacaaccagc ccctgccga cctcggcgcg 180
caccgcaaaa ccgcccgcctc gttcgcaact tcgggcaact ggtatttcac gccacaccac 240
aaactcagcc tgaccgcctc ccatcaggaa cgctgcccgt caacgcaaga actgtacgca 300
cacggcaagc acgtcgccac caacaccttt gaagtcggca acaaacacct caacaaagag 360
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gcagcctacc gcaaccgatt cggcaactac atttacgcc aaaccttaaa cgacggacgc 480
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gccgacttct acggcgcgga aggcgaaatc tacttcaaac cgacaccgcg ctaccgcac 600

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ggtgtttccg gcgactatgt acgaggccgt ctgaaaaacc tgccgtccct acccggcagg 660
gaagatccct acggcaaacg tcccttcacg gcacaagccg accaaaacgc ccccccgcatt 720
ccggctgcgc gcctcggtt ccacctgaaa acctcgctaa ccgaccgtat cgatgccaat 780
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aattggtacg tcaaagccga caacctgctc aaccaatccg tttagcccca cagcagcttc 960
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<210> 596

<211> 339

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 596

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Met Leu Ile Asp Asn Asn Val Arg His Tyr Ser Phe Phe Gly Val Glu
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Gln Ala Asn Trp Asp Asn Phe Thr Leu Glu Gly Gly Val Arg Val Glu
      20             25             30

Lys Gln Lys Ala Ser Ile Arg Tyr Asp Lys Ala Leu Ile Asp Arg Glu
      35             40             45

Asn Tyr Tyr Asn Gln Pro Leu Pro Asp Leu Gly Ala His Arg Gln Thr
      50             55             60

Ala Arg Ser Phe Ala Leu Ser Gly Asn Trp Tyr Phe Thr Pro His His
      65             70             75             80

Lys Leu Ser Leu Thr Ala Ser His Gln Glu Arg Leu Pro Ser Thr Gln
      85             90             95

Glu Leu Tyr Ala His Gly Lys His Val Ala Thr Asn Thr Phe Glu Val
      100            105            110

Gly Asn Lys His Leu Asn Lys Glu Arg Ser Asn Asn Ile Glu Leu Ala
      115            120            125

Leu Gly Tyr Lys Gly Asp Arg Trp Gln Tyr Asn Leu Ala Ala Tyr Arg
      130            135            140

Asn Arg Phe Gly Asn Tyr Ile Tyr Ala Gln Thr Leu Asn Asp Gly Arg
      145            150            155            160

Gly Pro Lys Ser Ile Glu Asp Asp Ser Glu Met Lys Leu Val Arg Tyr
      165            170            175

Asn Gln Ser Gly Ala Asp Phe Tyr Gly Ala Glu Gly Glu Ile Tyr Phe
      180            185            190

Lys Pro Thr Pro Arg Tyr Arg Ile Gly Val Ser Gly Asp Tyr Val Arg
      195            200            205

Gly Arg Leu Lys Asn Leu Pro Ser Leu Pro Gly Arg Glu Asp Pro Tyr
      210            215            220

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Gly Lys Arg Pro Phe Ile Ala Gln Ala Asp Gln Asn Ala Pro Arg Ile
 225 230 235 240
 Pro Ala Ala Arg Leu Gly Phe His Leu Lys Thr Ser Leu Thr Asp Arg
 245 250 255
 Ile Asp Ala Asn Leu Asp Tyr Tyr Arg Val Phe Ala Gln Asn Lys Leu
 260 265 270
 Ala Arg Tyr Glu Thr Arg Thr Pro Gly His His Met Leu Asn Leu Gly
 275 280 285
 Ala Asn Tyr Arg Arg Asn Thr Arg Tyr Gly Glu Trp Asn Trp Tyr Val
 290 295 300
 Lys Ala Asp Asn Leu Leu Asn Gln Ser Val Tyr Ala His Ser Ser Phe
 305 310 315 320
 Leu Ser Asp Thr Pro Gln Met Gly Arg Ser Phe Ala Gly Gly Val Asn
 325 330 335
 Val Lys Phe

<210> 597
 <211> 1020
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 597
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 gacaaagcat tgattgatcg ggaaaactac tacaaccacc ccctgcccgga cctcggcgcg 180
 caccgccaaa ccgcccgcctc attcgcactt tcgggcaact ggtatttcac gccacaacac 240
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 cacggcaaac acgtcgccac caacaccttt gaagtcggca acaaacacct caacaaagag 360
 cgttccaaca atatcgaaact cgcgctgggc tacgaaggcg accgctggca atacaatctg 420
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 ggcccaaat ccatcgaaga cgacagcgaa atgaagctcg tgcgctacaa ccaatccggc 540
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 ctctctgata cgccgcaaat gggccgcagc tttaccggcg gcgtgaacgt gaagttttta 1020

<210> 598
 <211> 339
 <212> PRT
 <213> *Neisseria meningitidis*

<400> 598
 Met Leu Leu Asp Asn Lys Val Gln His Tyr Ser Phe Phe Gly Val Glu

1	5	10	15
Gln Ala Asn Trp Asp Asn Phe Thr Leu Glu Gly Gly Val Arg Val Glu	20	25	30
Lys Gln Lys Ala Ser Ile Gln Tyr Asp Lys Ala Leu Ile Asp Arg Glu	35	40	45
Asn Tyr Tyr Asn His Pro Leu Pro Asp Leu Gly Ala His Arg Gln Thr	50	55	60
Ala Arg Ser Phe Ala Leu Ser Gly Asn Trp Tyr Phe Thr Pro Gln His	65	70	75
Lys Leu Ser Leu Thr Ala Ser His Gln Glu Arg Leu Pro Ser Thr Gln	85	90	95
Glu Leu Tyr Ala His Gly Lys His Val Ala Thr Asn Thr Phe Glu Val	100	105	110
Gly Asn Lys His Leu Asn Lys Glu Arg Ser Asn Asn Ile Glu Leu Ala	115	120	125
Leu Gly Tyr Glu Gly Asp Arg Trp Gln Tyr Asn Leu Ala Leu Tyr Arg	130	135	140
Asn Arg Phe Gly Asn Tyr Ile Tyr Ala Gln Thr Leu Asn Asp Gly Arg	145	150	155
Gly Pro Lys Ser Ile Glu Asp Asp Ser Glu Met Lys Leu Val Arg Tyr	165	170	175
Asn Gln Ser Gly Ala Asp Phe Tyr Gly Ala Glu Gly Glu Ile Tyr Phe	180	185	190
Lys Pro Thr Pro Arg Tyr Arg Ile Gly Val Ser Gly Asp Tyr Val Arg	195	200	205
Gly Arg Leu Lys Asn Leu Pro Ser Leu Pro Gly Arg Glu Asp Ala Tyr	210	215	220
Gly Asn Arg Pro Phe Ile Ala Gln Asp Asp Gln Asn Ala Pro Arg Val	225	230	235
Pro Ala Ala Arg Leu Gly Phe His Leu Lys Ala Ser Leu Thr Asp Arg	245	250	255
Ile Asp Ala Asn Leu Asp Tyr Tyr Arg Val Phe Ala Gln Asn Lys Leu	260	265	270
Ala Arg Tyr Glu Thr Arg Thr Pro Gly His His Met Leu Asn Leu Gly	275	280	285
Ala Asn Tyr Arg Arg Asn Thr Arg Tyr Gly Glu Trp Asn Trp Tyr Val	290	295	300
Lys Ala Asp Asn Leu Leu Asn Gln Ser Val Tyr Ala His Ser Ser Phe			

305 310 315 320

Leu Ser Asp Thr Pro Gln Met Gly Arg Ser Phe Thr Gly Gly Val Asn
325 330 335

Val Lys Phe

<210> 599
<211> 1020
<212> DNA
<213> Neisseria meningitidis

<400> 599
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<210> 600
<211> 339
<212> PRT
<213> Neisseria meningitidis

<400> 600
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Lys Gln Lys Ala Ser Ile Arg Tyr Asp Lys Ala Leu Ile Asp Arg Glu
35 40 45
Asn Tyr Tyr Asn His Pro Leu Pro Asp Leu Gly Ala His Arg Gln Thr
50 55 60
Ala Arg Ser Phe Ala Leu Ser Gly Asn Trp Tyr Phe Thr Pro Gln His
65 70 75 80
Lys Leu Ser Leu Thr Ala Ser His Gln Glu Arg Leu Pro Ser Thr Gln
85 90 95

Glu Leu Tyr Ala His Gly Lys His Val Ala Thr Asn Thr Phe Glu Val
 100 105 110
 Gly Asn Lys His Leu Asn Lys Glu Arg Ser Asn Asn Ile Glu Leu Ala
 115 120 125
 Leu Gly Tyr Glu Gly Asp Arg Trp Gln Tyr Asn Leu Ala Leu Tyr Arg
 130 135 140
 Asn Arg Phe Gly Asn Tyr Ile Tyr Ala Gln Thr Leu Asn Asp Gly Arg
 145 150 155 160
 Gly Pro Lys Ser Ile Glu Asp Asp Ser Glu Met Lys Leu Val Arg Tyr
 165 170 175
 Asn Gln Ser Gly Ala Asp Phe Tyr Gly Ala Glu Gly Glu Ile Tyr Phe
 180 185 190
 Lys Pro Thr Pro Arg Tyr Arg Ile Gly Val Ser Gly Asp Tyr Val Arg
 195 200 205
 Gly Arg Leu Lys Asn Leu Pro Ser Leu Pro Gly Arg Glu Asp Ala Tyr
 210 215 220
 Gly Asn Arg Pro Leu Ile Ala Gln Ala Asp Gln Asn Ala Pro Arg Val
 225 230 235 240
 Pro Ala Ala Arg Leu Gly Val His Leu Lys Ala Ser Leu Thr Asp Arg
 245 250 255
 Ile Asp Ala Asn Leu Asp Tyr Tyr Arg Val Phe Ala Gln Asn Lys Leu
 260 265 270
 Ala Arg Tyr Glu Thr Arg Thr Pro Gly His His Met Leu Asn Leu Gly
 275 280 285
 Ala Asn Tyr Arg Arg Asn Thr Arg Tyr Gly Glu Trp Asn Trp Tyr Val
 290 295 300
 Lys Ala Asp Asn Leu Leu Asn Gln Ser Val Tyr Ala His Ser Ser Phe
 305 310 315 320
 Leu Ser Asp Thr Pro Gln Met Gly Arg Ser Phe Thr Gly Gly Val Asn
 325 330 335
 Val Lys Phe

<210> 601
 <211> 2277
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 601

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<210> 602

<211> 758

<212> PRT

<213> Neisseria gonorrhoeae

<400> 602

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Met Ala Gln Ile Thr Leu Lys Pro Ile Val Leu Ser Ile Leu Leu Ile
  1             5             10             15

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Asn Thr Pro Leu Leu Ala Gln Ala His Glu Thr Glu Gln Ser Val Gly
  20             25             30

```

```

Leu Glu Thr Val Ser Val Val Gly Lys Ser Arg Pro Arg Ala Thr Ser
  35             40             45

```

```

Gly Leu Leu His Thr Ser Thr Ala Ser Asp Lys Ile Ile Ser Gly Asp
  50             55             60

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Thr	Leu	Arg	Gln	Lys	Ala	Val	Asn	Leu	Gly	Asp	Ala	Leu	Asp	Gly	Val	65	70	75	80
Pro	Gly	Ile	His	Ala	Ser	Gln	Tyr	Gly	Gly	Gly	Ala	Ser	Ala	Pro	Val	85	90	95	
Ile	Arg	Gly	Gln	Thr	Gly	Arg	Arg	Ile	Lys	Val	Leu	Asn	His	His	Gly	100	105	110	
Glu	Thr	Gly	Asp	Met	Ala	Asp	Phe	Ser	Pro	Asp	His	Ala	Ile	Met	Val	115	120	125	
Asp	Thr	Ala	Leu	Ser	Gln	Gln	Val	Glu	Ile	Leu	Arg	Gly	Pro	Val	Thr	130	135	140	
Leu	Leu	Tyr	Ser	Ser	Gly	Asn	Val	Ala	Gly	Leu	Val	Asp	Val	Ala	Asp	145	150	155	160
Gly	Lys	Ile	Pro	Glu	Lys	Met	Pro	Glu	Asn	Gly	Val	Ser	Gly	Glu	Ala	165	170	175	
Gly	Leu	Arg	Leu	Ser	Ser	Gly	Asn	Leu	Glu	Lys	Leu	Thr	Ser	Ala	Gly	180	185	190	
Ile	Asn	Ile	Gly	Leu	Gly	Lys	Asn	Phe	Val	Leu	His	Thr	Glu	Gly	Leu	195	200	205	
Tyr	Arg	Lys	Ser	Gly	Asp	Tyr	Ala	Val	Pro	Arg	Tyr	Arg	Asn	Leu	Lys	210	215	220	
Arg	Leu	Pro	Asp	Ser	His	Ala	Asp	Ser	Gln	Thr	Gly	Ser	Ile	Gly	Leu	225	230	235	240
Ser	Trp	Val	Gly	Glu	Lys	Gly	Phe	Ile	Gly	Ala	Ala	Tyr	Ser	Asp	Arg	245	250	255	
Arg	Asp	Arg	Tyr	Gly	Leu	Pro	Ala	His	Ser	His	Glu	Tyr	Asp	Asp	Cys	260	265	270	
His	Ala	Asp	Ile	Ile	Trp	Gln	Lys	Ser	Leu	Ile	Asn	Lys	Arg	Tyr	Leu	275	280	285	
Gln	Leu	Tyr	Pro	His	Leu	Leu	Thr	Glu	Glu	Asp	Ile	Asp	Tyr	Asp	Asn	290	295	300	
Pro	Gly	Leu	Ser	Cys	Gly	Phe	His	Asp	Gly	Asp	Gly	Ala	His	Ala	His	305	310	315	320
Thr	His	Asn	Gly	Lys	Pro	Trp	Ile	Asp	Leu	Arg	Asn	Lys	Arg	Tyr	Glu	325	330	335	
Leu	Arg	Ala	Glu	Trp	Lys	Gln	Pro	Phe	Pro	Gly	Phe	Glu	Ala	Leu	Arg	340	345	350	
Val	His	Leu	Asn	Arg	Asn	Asp	Tyr	His	His	Asp	Glu	Lys	Ala	Gly	Asp	355	360	365	

Ala	Val	Glu	Asn	Phe	Phe	Asn	Asn	Lys	Thr	His	Asn	Ala	Arg	Ile	Glu	370	375	380
Leu	Arg	His	Gln	Pro	Ile	Gly	Arg	Leu	Lys	Gly	Ser	Trp	Gly	Val	Gln	385	390	395
Tyr	Leu	Gly	Gln	Lys	Ser	Ser	Ala	Leu	Ser	Ala	Ile	Pro	Glu	Thr	Val	405	410	415
Gln	Gln	Pro	Met	Leu	Ile	Asp	Asn	Asn	Val	Arg	His	Tyr	Ser	Phe	Phe	420	425	430
Gly	Val	Glu	Gln	Ala	Asn	Trp	Asp	Asn	Phe	Thr	Leu	Glu	Gly	Gly	Val	435	440	445
Arg	Val	Glu	Lys	Gln	Lys	Ala	Ser	Ile	Arg	Tyr	Asp	Lys	Ala	Leu	Ile	450	455	460
Asp	Arg	Glu	Asn	Tyr	Tyr	Asn	Gln	Pro	Leu	Pro	Asp	Leu	Gly	Ala	His	465	470	475
Arg	Gln	Thr	Ala	Arg	Ser	Phe	Ala	Leu	Ser	Gly	Asn	Trp	Tyr	Phe	Thr	485	490	495
Pro	His	His	Lys	Leu	Ser	Leu	Thr	Ala	Ser	His	Gln	Glu	Arg	Leu	Pro	500	505	510
Ser	Thr	Gln	Glu	Leu	Tyr	Ala	His	Gly	Lys	His	Val	Ala	Thr	Asn	Thr	515	520	525
Phe	Glu	Val	Gly	Asn	Lys	His	Leu	Asn	Lys	Glu	Arg	Ser	Asn	Asn	Ile	530	535	540
Glu	Leu	Ala	Leu	Gly	Tyr	Glu	Gly	Asp	Arg	Trp	Gln	Tyr	Asn	Leu	Ala	545	550	555
Ala	Tyr	Arg	Asn	Arg	Phe	Gly	Asn	Tyr	Ile	Tyr	Ala	Gln	Thr	Leu	Asn	565	570	575
Asp	Gly	Arg	Gly	Pro	Lys	Ser	Ile	Glu	Asp	Asp	Ser	Glu	Met	Lys	Leu	580	585	590
Val	Arg	Tyr	Asn	Gln	Ser	Gly	Ala	Asp	Phe	Tyr	Gly	Ala	Glu	Gly	Glu	595	600	605
Ile	Tyr	Phe	Lys	Pro	Thr	Pro	Arg	Tyr	Arg	Ile	Gly	Val	Ser	Gly	Asp	610	615	620
Tyr	Val	Arg	Gly	Arg	Leu	Lys	Asn	Leu	Pro	Ser	Leu	Pro	Gly	Arg	Glu	625	630	635
Asp	Pro	Tyr	Gly	Lys	Arg	Pro	Phe	Ile	Ala	Gln	Ala	Asp	Gln	Asn	Ala	645	650	655
Pro	Arg	Ile	Pro	Ala	Ala	Arg	Leu	Gly	Phe	His	Leu	Lys	Thr	Ser	Leu	660	665	670

Thr Asp Arg Ile Asp Ala Asn Leu Asp Tyr Tyr Arg Val Phe Ala Gln
 675 680 685
 Asn Lys Leu Ala Arg Tyr Glu Thr Arg Thr Pro Gly His His Met Leu
 690 695 700
 Asn Leu Gly Ala Asn Tyr Arg Arg Asn Thr Arg Tyr Gly Glu Trp Asn
 705 710 715 720
 Trp Tyr Val Lys Ala Asp Asn Leu Leu Asn Gln Ser Val Tyr Ala His
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 Ser Ser Phe Leu Ser Asp Thr Pro Gln Met Gly Arg Ser Phe Thr Gly
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 Gly Val Asn Val Lys Phe
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 <211> 2277
 <212> DNA
 <213> Neisseria meningitidis

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 aaaagccgctc cgcgcgccac gtcggggctg ttgcacactt cgaccgcctc cgacaaaatc 180
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 ggcaaaatcc ccgaaaaaat gcctgaaaac ggcgtatcgg gcgaactcgg attgcgtttg 540
 agcagcggca atctggaaaa actcacgtcc ggcgcatca atatcggttt gggcaaaaac 600
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Ser	Trp	Val	Gly	Glu	Lys	Gly	Phe	Ile	Gly	Val	Ala	Tyr	Ser	Asp	Arg	245	250	255	
Arg	Asp	Gln	Tyr	Gly	Leu	Pro	Ala	His	Ser	His	Glu	Tyr	Asp	Asp	Cys	260	265	270	
His	Ala	Asp	Ile	Ile	Trp	Gln	Lys	Ser	Leu	Ile	Asn	Lys	Arg	Tyr	Leu	275	280	285	
Gln	Leu	Tyr	Pro	His	Leu	Leu	Thr	Glu	Glu	Asp	Ile	Asp	Tyr	Asp	Asn	290	295	300	
Pro	Gly	Leu	Ser	Cys	Gly	Phe	His	Asp	Asp	Asp	Asn	Ala	His	Ala	His	305	310	315	320
Thr	His	Ser	Gly	Arg	Pro	Trp	Ile	Asp	Leu	Arg	Asn	Lys	Arg	Tyr	Glu	325	330	335	
Leu	Arg	Ala	Glu	Trp	Lys	Gln	Pro	Phe	Pro	Gly	Phe	Glu	Ala	Leu	Arg	340	345	350	
Val	His	Leu	Asn	Arg	Asn	Asp	Tyr	Arg	His	Asp	Glu	Lys	Ala	Gly	Asp	355	360	365	
Ala	Val	Glu	Asn	Phe	Phe	Asn	Asn	Gln	Thr	Gln	Asn	Ala	Arg	Ile	Glu	370	375	380	
Leu	Arg	His	Gln	Pro	Ile	Gly	Arg	Leu	Lys	Gly	Ser	Trp	Gly	Val	Gln	385	390	395	400
Tyr	Leu	Gln	Gln	Lys	Ser	Ser	Ala	Leu	Ser	Ala	Ile	Ser	Glu	Ala	Val	405	410	415	
Lys	Gln	Pro	Met	Leu	Leu	Asp	Asn	Lys	Val	Gln	His	Tyr	Ser	Phe	Phe	420	425	430	
Gly	Val	Glu	Gln	Ala	Asn	Trp	Asp	Asn	Phe	Thr	Leu	Glu	Gly	Gly	Val	435	440	445	
Arg	Val	Glu	Lys	Gln	Lys	Ala	Ser	Ile	Gln	Tyr	Asp	Lys	Ala	Leu	Ile	450	455	460	
Asp	Arg	Glu	Asn	Tyr	Tyr	Asn	His	Pro	Leu	Pro	Asp	Leu	Gly	Ala	His	465	470	475	480
Arg	Gln	Thr	Ala	Arg	Ser	Phe	Ala	Leu	Ser	Gly	Asn	Trp	Tyr	Phe	Thr	485	490	495	
Pro	Gln	His	Lys	Leu	Ser	Leu	Thr	Ala	Ser	His	Gln	Glu	Arg	Leu	Pro	500	505	510	
Ser	Thr	Gln	Glu	Leu	Tyr	Ala	His	Gly	Lys	His	Val	Ala	Thr	Asn	Thr	515	520	525	

Phe Glu Val Gly Asn Lys His Leu Asn Lys Glu Arg Ser Asn Asn Ile
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 Glu Leu Ala Leu Gly Tyr Glu Gly Asp Arg Trp Gln Tyr Asn Leu Ala
 545 550 555 560
 Leu Tyr Arg Asn Arg Phe Gly Asn Tyr Ile Tyr Ala Gln Thr Leu Asn
 565 570 575
 Asp Gly Arg Gly Pro Lys Ser Ile Glu Asp Asp Ser Glu Met Lys Leu
 580 585 590
 Val Arg Tyr Asn Gln Ser Gly Ala Asp Phe Tyr Gly Ala Glu Gly Glu
 595 600 605
 Ile Tyr Phe Lys Pro Thr Pro Arg Tyr Arg Ile Gly Val Ser Gly Asp
 610 615 620
 Tyr Val Arg Gly Arg Leu Lys Asn Leu Pro Ser Leu Pro Gly Arg Glu
 625 630 635 640
 Asp Ala Tyr Gly Asn Arg Pro Phe Ile Ala Gln Asp Asp Gln Asn Ala
 645 650 655
 Pro Arg Val Pro Ala Ala Arg Leu Gly Phe His Leu Lys Ala Ser Leu
 660 665 670
 Thr Asp Arg Ile Asp Ala Asn Leu Asp Tyr Tyr Arg Val Phe Ala Gln
 675 680 685
 Asn Lys Leu Ala Arg Tyr Glu Thr Arg Thr Pro Gly His His Met Leu
 690 695 700
 Asn Leu Gly Ala Asn Tyr Arg Arg Asn Thr Arg Tyr Gly Glu Trp Asn
 705 710 715 720
 Trp Tyr Val Lys Ala Asp Asn Leu Leu Asn Gln Ser Val Tyr Ala His
 725 730 735
 Ser Ser Phe Leu Ser Asp Thr Pro Gln Met Gly Arg Ser Phe Thr Gly
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 <211> 2277
 <212> DNA
 <213> Neisseria meningitidis

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 aaaagcgcgc cgcgcgccac ttcggggctg ctgcacactt ctaccgcctc cgacaaaatc 180
 atcagcggcg acaccttgcg acaaaaagcc gtcaacttgg gtgatgcttt agacggcgta 240
 ccgggcattc atgcctcgca atacggcggc ggcgcattcc ctcccgttat tcgcggtcaa 300

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<210> 606

<211> 758

<212> PRT

<213> *Neisseria meningitidis*

<400> 606

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Met Ala Gln Thr Thr Leu Lys Pro Ile Val Leu Ser Ile Leu Leu Ile
  1             5             10            15

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Asn Thr Pro Leu Leu Ser Gln Ala His Gly Thr Glu Gln Ser Val Gly
      20             25            30

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Leu Glu Thr Val Ser Val Val Gly Lys Ser Arg Pro Arg Ala Thr Ser
      35             40            45

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Gly Leu Leu His Thr Ser Thr Ala Ser Asp Lys Ile Ile Ser Gly Asp
      50             55            60

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Thr Leu Arg Gln Lys Ala Val Asn Leu Gly Asp Ala Leu Asp Gly Val
      65             70            75            80

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Pro Gly Ile His Ala Ser Gln Tyr Gly Gly Gly Ala Ser Ala Pro Val
 85 90 95
 Ile Arg Gly Gln Thr Gly Arg Arg Ile Lys Val Leu Asn His His Gly
 100 105 110
 Glu Thr Gly Asp Met Ala Asp Phe Ser Pro Asp His Ala Ile Met Val
 115 120 125
 Asp Ser Ala Leu Ser Gln Gln Val Glu Ile Leu Arg Gly Pro Val Thr
 130 135 140
 Leu Leu Tyr Ser Ser Gly Asn Val Ala Gly Leu Val Asp Val Ala Asp
 145 150 155 160
 Gly Lys Ile Pro Glu Lys Met Pro Glu Asn Gly Val Ser Gly Glu Leu
 165 170 175
 Gly Leu Arg Leu Ser Ser Gly Asn Leu Glu Lys Leu Thr Ser Gly Gly
 180 185 190
 Ile Asn Ile Gly Leu Gly Lys Asn Phe Val Leu His Thr Glu Gly Leu
 195 200 205
 Tyr Arg Lys Ser Gly Asp Tyr Ala Val Pro Arg Tyr Arg Asn Leu Lys
 210 215 220
 Arg Leu Pro Asp Ser His Ala Asp Ser Gln Thr Gly Ser Ile Gly Leu
 225 230 235 240
 Ser Trp Val Gly Glu Lys Gly Phe Ile Gly Ala Ala Tyr Ser Asp Arg
 245 250 255
 Arg Asp Gln Tyr Gly Leu Pro Ala His Ser His Glu Tyr Asp Asp Cys
 260 265 270
 His Ala Asp Ile Ile Trp Gln Lys Ser Leu Ile Asn Lys Arg Tyr Leu
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 Gln Leu Tyr Pro His Leu Leu Thr Glu Glu Asp Ile Asp Tyr Asp Asn
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 Pro Gly Leu Ser Cys Gly Phe His Asp Asp Asp Ala His Ala His
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 Ala His Asn Gly Lys Pro Trp Ile Asp Leu Arg Asn Lys Arg Tyr Glu
 325 330 335
 Leu Arg Ala Glu Trp Lys Gln Pro Phe Pro Gly Phe Glu Ala Leu Arg
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 Val His Leu Asn Arg Asn Asp Tyr Arg His Asp Glu Lys Ala Gly Asp
 355 360 365
 Ala Val Glu Asn Phe Phe Asn Asn Gln Thr Gln Asn Ala Arg Ile Glu
 370 375 380

Leu Arg His Gln Pro Ile Gly Arg Leu Lys Gly Ser Trp Gly Val Gln
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 Tyr Leu Gly Gln Lys Ser Ser Ala Leu Ser Ala Thr Ser Glu Ala Val
 405 410 415
 Lys Gln Pro Met Leu Leu Asp Asn Lys Val Gln His Tyr Ser Phe Phe
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 Gly Val Glu Gln Ala Asn Trp Asp Asn Phe Thr Leu Glu Gly Gly Val
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 Arg Val Glu Lys Gln Lys Ala Ser Ile Arg Tyr Asp Lys Ala Leu Ile
 450 455 460
 Asp Arg Glu Asn Tyr Tyr Asn His Pro Leu Pro Asp Leu Gly Ala His
 465 470 475 480
 Arg Gln Thr Ala Arg Ser Phe Ala Leu Ser Gly Asn Trp Tyr Phe Thr
 485 490 495
 Pro Gln His Lys Leu Ser Leu Thr Ala Ser His Gln Glu Arg Leu Pro
 500 505 510
 Ser Thr Gln Glu Leu Tyr Ala His Gly Lys His Val Ala Thr Asn Thr
 515 520 525
 Phe Glu Val Gly Asn Lys His Leu Asn Lys Glu Arg Ser Asn Asn Ile
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 Glu Leu Ala Leu Gly Tyr Glu Gly Asp Arg Trp Gln Tyr Asn Leu Ala
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 Leu Tyr Arg Asn Arg Phe Gly Asn Tyr Ile Tyr Ala Gln Thr Leu Asn
 565 570 575
 Asp Gly Arg Gly Pro Lys Ser Ile Glu Asp Asp Ser Glu Met Lys Leu
 580 585 590
 Val Arg Tyr Asn Gln Ser Gly Ala Asp Phe Tyr Gly Ala Glu Gly Glu
 595 600 605
 Ile Tyr Phe Lys Pro Thr Pro Arg Tyr Arg Ile Gly Val Ser Gly Asp
 610 615 620
 Tyr Val Arg Gly Arg Leu Lys Asn Leu Pro Ser Leu Pro Gly Arg Glu
 625 630 635 640
 Asp Ala Tyr Gly Asn Arg Pro Leu Ile Ala Gln Ala Asp Gln Asn Ala
 645 650 655
 Pro Arg Val Pro Ala Ala Arg Leu Gly Val His Leu Lys Ala Ser Leu
 660 665 670
 Thr Asp Arg Ile Asp Ala Asn Leu Asp Tyr Tyr Arg Val Phe Ala Gln
 675 680 685

Asn Lys Leu Ala Arg Tyr Glu Thr Arg Thr Pro Gly His His Met Leu
690 695 700

Asn Leu Gly Ala Asn Tyr Arg Arg Asn Thr Arg Tyr Gly Glu Trp Asn
705 710 715 720

Trp Tyr Val Lys Ala Asp Asn Leu Leu Asn Gln Ser Val Tyr Ala His
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Gly Val Asn Val Lys Phe
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<211> 1110
<212> DNA
<213> Neisseria gonorrhoeae

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<210> 608
<211> 369
<212> PRT
<213> Neisseria gonorrhoeae

<400> 608
Tyr Cys Lys Ala Asp Pro Phe Pro Ala Ala Leu Leu Ala Asn Gln Lys
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Ile Thr Ala Arg Gln Ser Asp Lys Asp Val Arg His Ile Glu Ile Asp
20 25 30

Leu Ser Gly Ser Asp Leu His Tyr Leu Pro Gly Asp Ala Leu Gly Val
35 40 45

Trp Phe Asp Asn Asp Pro Ala Leu Val Gly Glu Ile Leu Asp Leu Leu
 50 55 60
 Gly Ile Asn Pro Ala Thr Glu Ile Gln Ala Gly Gly Lys Thr Leu Pro
 65 70 75 80
 Val Ala Ser Ala Leu Leu Ser His Phe Glu Leu Thr Gln Asn Thr Pro
 85 90 95
 Ala Phe Val Lys Gly Tyr Ala Thr Phe Ala Asp Asn Asp Glu Leu Asp
 100 105 110
 Arg Ile Ala Ala Asp Asn Ala Val Leu Gln Gly Phe Val Gln Ser Thr
 115 120 125
 Pro Ile Ala Gly Val Leu His Arg Phe Pro Ala Lys Leu Thr Ala Glu
 130 135 140
 Gln Phe Ala Gly Leu Leu Arg Pro Leu Ala Pro Arg Leu Tyr Ser Ile
 145 150 155 160
 Ser Ser Ser Gln Ala Glu Ala Gly Asp Glu Val His Leu Thr Val Gly
 165 170 175
 Ala Val Arg Phe Glu His Glu Gly Arg Ala Arg Ala Gly Gly Ala Ser
 180 185 190
 Gly Phe Phe Ala Asp Arg Leu Glu Glu Asp Gly Thr Val Arg Val Phe
 195 200 205
 Ala Glu Arg Asn Asp Gly Phe Arg Leu Pro Glu Asp Ser Arg Lys Pro
 210 215 220
 Ile Val Met Ile Gly Ser Gly Thr Gly Val Ala Pro Phe Arg Ala Phe
 225 230 235 240
 Val Gln Gln Arg Ala Ala Glu Asn Ala Glu Gly Arg Asn Trp Leu Ile
 245 250 255
 Phe Gly Asn Pro His Phe Ala Ala Asp Phe Leu Tyr Gln Thr Glu Trp
 260 265 270
 Gln Gln Phe Ala Lys Asp Gly Phe Leu His Arg Tyr Asp Phe Ala Trp
 275 280 285
 Ser Arg Asp Gln Glu Glu Lys Ile Tyr Val Gln Asp Lys Ile Arg Glu
 290 295 300
 Gln Ala Glu Gly Leu Trp Gln Trp Leu Gln Glu Gly Ala His Ile Tyr
 305 310 315 320
 Val Cys Gly Asp Ala Ala Lys Met Ala Lys Glu Val Glu Ala Ala Leu
 325 330 335
 Leu Asp Val Ile Ile Gly Ala Gly His Ser Asp Glu Asp Gly Ala Glu
 340 345 350

Gly Tyr Leu Asp Met Leu Arg Glu Glu Lys Arg Tyr Gln Arg Asp Val
 355 360 365

Tyr

<210> 609
 <211> 1800
 <212> DNA
 <213> Neisseria meningitidis

<400> 609
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 aaaaacatcg ccggcgaaac ccgcctgctg ctggttacct ccaccaagg cgaaggcgaa 360
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<210> 610
 <211> 599
 <212> PRT
 <213> Neisseria meningitidis

<400> 610
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Gln Leu Leu Ser Gly Leu Asp Ala Ala Gln Trp Ala Trp Leu Ser Gly
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Tyr Ala Trp Ala Lys Ala Gly Asn Gly Ala Ser Ala Gly Leu Pro Ala
 35 40 45
 Leu Gln Thr Ala Leu Pro Ala Ala Glu Pro Phe Ser Val Thr Val Leu
 50 55 60
 Ser Ala Ser Gln Thr Gly Asn Ala Lys Ser Val Ala Asp Lys Ala Ala
 65 70 75 80
 Asp Ser Leu Glu Ala Ala Gly Ile Gln Val Ser Arg Ala Glu Leu Lys
 85 90 95
 Asp Tyr Lys Ala Lys Asn Ile Ala Gly Glu Arg Arg Leu Leu Leu Val
 100 105 110
 Thr Ser Thr Gln Gly Glu Gly Glu Pro Pro Lys Glu Ala Val Val Leu
 115 120 125
 His Lys Leu Leu Asn Gly Lys Lys Ala Pro Lys Leu Asp Lys Leu Gln
 130 135 140
 Phe Ala Val Leu Gly Leu Gly Asp Ser Ser Tyr Pro Asn Phe Cys Gln
 145 150 155 160
 Ala Gly Lys Asp Phe Asp Arg Arg Phe Glu Glu Leu Gly Ala Lys Arg
 165 170 175
 Leu Leu Glu Arg Val Asp Ala Asp Leu Asp Phe Thr Ala Ser Ala Asn
 180 185 190
 Ala Trp Thr Asp Asn Ile Ala Ala Leu Leu Lys Glu Glu Ala Ala Lys
 195 200 205
 Asn Arg Ala Thr Pro Ala Pro Gln Thr Thr Pro Pro Ala Gly Leu Gln
 210 215 220
 Thr Ala Pro Asp Gly Arg Tyr Cys Lys Ala Ala Pro Phe Pro Ala Ala
 225 230 235 240
 Leu Leu Ala Asn Gln Lys Ile Thr Ala Arg Gln Ser Asp Lys Asp Val
 245 250 255
 Arg His Ile Glu Ile Asp Leu Ser Gly Ser Asp Leu His Tyr Leu Pro
 260 265 270
 Gly Asp Ala Leu Gly Val Trp Phe Asp Asn Asp Pro Ala Leu Val Arg
 275 280 285
 Glu Ile Leu Asp Leu Leu Gly Ile Asp Pro Ala Thr Glu Ile Gln Ala
 290 295 300
 Gly Gly Lys Met Met Pro Val Ala Arg Ala Leu Ser Ser His Phe Glu
 305 310 315 320
 Leu Thr Gln Asn Thr Pro Ala Phe Val Lys Gly Tyr Ala Ala Phe Ala

<213> Neisseria meningitidis

<400> 611

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<210> 612

<211> 599

<212> PRT

<213> Neisseria meningitidis

<400> 612

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Gln Leu Leu Ser Gly Leu Asp Ala Ala Gln Trp Ala Trp Leu Ser Gly
      20              25              30

Tyr Ala Trp Ala Lys Ala Gly Asn Gly Ala Ser Ala Gly Leu Pro Ala
      35              40              45

Leu Gln Thr Ala Leu Pro Thr Ala Glu Pro Phe Ser Val Thr Val Leu
      50              55              60

Ser Ala Ser Gln Thr Gly Asn Ala Lys Ser Val Ala Asp Lys Ala Ala
      65              70              75              80

Asp Ser Leu Glu Ala Ala Gly Ile Gln Val Ser Arg Ala Glu Leu Lys
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				85				90				95				
Asp	Tyr	Lys	Ala	Lys	Asn	Ile	Ala	Gly	Glu	Arg	Arg	Leu	Leu	Leu	Val	
			100				105						110			
Thr	Ser	Thr	Gln	Gly	Glu	Gly	Glu	Pro	Pro	Glu	Glu	Ala	Val	Val	Leu	
			115				120						125			
His	Lys	Leu	Leu	Asn	Gly	Lys	Lys	Ala	Pro	Lys	Leu	Asp	Lys	Leu	Gln	
			130				135						140			
Phe	Ala	Val	Leu	Gly	Leu	Gly	Asp	Ser	Ser	Tyr	Pro	Asn	Phe	Cys	Arg	
			145				150						155	160		
Ala	Gly	Lys	Asp	Phe	Asp	Lys	Arg	Phe	Glu	Glu	Leu	Gly	Ala	Lys	Arg	
			165						170						175	
Leu	Leu	Glu	Arg	Val	Asp	Ala	Asp	Leu	Asp	Phe	Ala	Ala	Ala	Ala	Asp	
			180						185			190				
Gly	Trp	Thr	Asp	Asn	Ile	Ala	Ala	Leu	Leu	Lys	Glu	Glu	Ala	Ala	Lys	
			195						200			205				
Asn	Arg	Ala	Thr	Pro	Ala	Pro	Gln	Thr	Thr	Pro	Pro	Ala	Gly	Leu	Gln	
			210			215						220				
Thr	Ala	Pro	Asp	Gly	Arg	Tyr	Cys	Lys	Ala	Asp	Pro	Phe	Pro	Ala	Ala	
			225			230						235			240	
Leu	Leu	Ala	Asn	Gln	Lys	Ile	Thr	Ala	Arg	Gln	Ser	Asp	Lys	Asp	Val	
			245						250						255	
Arg	His	Ile	Glu	Ile	Asp	Leu	Ser	Gly	Ser	Asp	Leu	His	Tyr	Leu	Pro	
			260						265						270	
Gly	Asp	Ala	Leu	Gly	Val	Trp	Phe	Asp	Asn	Asp	Pro	Ala	Leu	Val	Arg	
			275						280						285	
Glu	Ile	Leu	Asp	Leu	Leu	Gly	Ile	Asp	Gln	Ala	Thr	Glu	Ile	Gln	Ala	
			290			295						300				
Gly	Gly	Lys	Thr	Leu	Pro	Val	Ala	Ser	Ala	Leu	Leu	Ser	His	Phe	Glu	
			305			310						315			320	
Leu	Thr	Gln	Asn	Thr	Pro	Ala	Phe	Val	Lys	Gly	Tyr	Ala	Pro	Phe	Ala	
			325						330						335	
Asp	Asp	Asp	Glu	Leu	Asp	Arg	Ile	Ala	Ala	Asp	Asn	Ala	Val	Leu	Gln	
			340						345						350	
Gly	Phe	Val	Gln	Ser	Thr	Pro	Ile	Ala	Asp	Val	Leu	His	Arg	Phe	Pro	
			355						360						365	
Ala	Lys	Leu	Thr	Ala	Glu	Gln	Phe	Ala	Gly	Leu	Leu	Arg	Pro	Leu	Ala	
			370			375						380				

Pro Arg Leu Tyr Ser Ile Ser Ser Ser Gln Ala Glu Val Gly Asp Glu
 385 390 395 400
 Val His Leu Thr Val Gly Ala Val Arg Phe Glu His Glu Gly Arg Ala
 405 410 415
 Arg Ala Gly Gly Ala Ser Gly Phe Leu Ala Asp Arg Leu Glu Glu Asp
 420 425 430
 Gly Thr Val Arg Val Phe Val Glu Arg Asn Asp Gly Phe Arg Leu Pro
 435 440 445
 Glu Asp Ser Arg Lys Pro Ile Val Met Ile Gly Ser Gly Thr Gly Val
 450 455 460
 Ala Pro Phe Arg Ala Phe Val Gln Gln Arg Ala Ala Glu Asn Ala Glu
 465 470 475 480
 Gly Lys Asn Trp Leu Phe Phe Gly Asn Pro His Phe Ala Arg Asp Phe
 485 490 495
 Leu Tyr Gln Thr Glu Trp Gln Gln Phe Ala Lys Asp Gly Phe Leu His
 500 505 510
 Arg Tyr Asp Phe Ala Trp Ser Arg Asp Gln Glu Glu Lys Ile Tyr Val
 515 520 525
 Gln Asp Lys Ile Arg Glu Gln Ala Glu Gly Leu Trp Gln Trp Leu Gln
 530 535 540
 Glu Gly Ala His Ile Tyr Val Cys Gly Asp Ala Ala Lys Met Ala Lys
 545 550 555 560
 Asp Val Glu Ala Ala Leu Leu Asp Val Ile Ile Gly Ala Gly His Leu
 565 570 575
 Asp Glu Glu Gly Ala Glu Glu Tyr Leu Asp Met Leu Arg Glu Glu Lys
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 Arg Tyr Gln Arg Asp Val Tyr
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<210> 613

<211> 1812

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 613

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 gtgatggaca gcaacgacct tgaaaaagaa cgcggcacat caatcctcgc caaaaacacc 180
 gccatcgatt acgaaggctg ccacatcaat atcgtcgaca cgccgggaca cgccgacttc 240
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 caggaagggtc cgatgccgca aaccgcgttc gtgacaaaaa aagccttggt tttggggctg 360
 aaaccgattg tcgtcatcaa caaatcgac aaaccgtccg cccgtccgag ctgggttatc 420
 gaccagactt tcgagttggt cgacaacttg ggtgcgaccg acgagcagtt ggatttcccg 480

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<210> 614

<211> 603

<212> PRT

<213> Neisseria gonorrhoeae

<400> 614

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Met Lys Gln Ile Arg Asn Ile Ala Ile Ile Ala His Val Asp His Gly
  1             5             10             15

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Lys Thr Thr Leu Val Asp Gln Leu Leu Arg Gln Ser Gly Thr Phe Arg
      20             25             30

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Ala Asn Gln Gln Val Asp Glu Arg Val Met Asp Ser Asn Asp Leu Glu
      35             40             45

```

```

Lys Glu Arg Gly Ile Thr Ile Leu Ala Lys Asn Thr Ala Ile Asp Tyr
      50             55             60

```

```

Glu Gly Cys His Ile Asn Ile Val Asp Thr Pro Gly His Ala Asp Phe
      65             70             75             80

```

```

Gly Gly Glu Val Glu Arg Val Leu Gly Met Val Asp Cys Val Val Leu
      85             90             95

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```

Leu Val Asp Ala Gln Glu Gly Pro Met Pro Gln Thr Arg Phe Val Thr
      100            105            110

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Lys Lys Ala Leu Ala Leu Gly Leu Lys Pro Ile Val Val Ile Asn Lys
      115            120            125

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Ile Asp Lys Pro Ser Ala Arg Pro Ser Trp Val Ile Asp Gln Thr Phe

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130	135	140
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Ile Val Tyr Ala Ser Gly Leu Ser Gly Phe Ala Lys Leu Glu Glu Thr 165 170 175		
Asp Glu Ser Ser Asp Met Arg Pro Leu Phe Asp Thr Ile Leu Lys Tyr 180 185 190		
Thr Pro Ala Pro Ser Gly Ser Ala Asp Glu Pro Leu Gln Leu Gln Ile 195 200 205		
Ser Gln Leu Asp Tyr Asp Asn Tyr Thr Gly Arg Leu Gly Ile Gly Arg 210 215 220		
Ile Leu Asn Gly Arg Ile Lys Pro Gly Gln Thr Val Ala Val Met Asn 225 230 235 240		
His Glu Gln Gln Ile Ala Gln Gly Arg Ile Asn Gln Leu Leu Gly Phe 245 250 255		
Lys Gly Leu Glu Arg Val Pro Leu Glu Glu Ala Glu Ala Gly Asp Ile 260 265 270		
Val Ile Ile Ser Gly Ile Glu Asp Ile Gly Ile Gly Val Thr Ile Thr 275 280 285		
Asp Lys Asp Asn Pro Lys Gly Leu Pro Met Leu Ser Val Asp Glu Pro 290 295 300		
Thr Leu Thr Met Asp Phe Met Val Asn Thr Ser Pro Leu Ala Gly Thr 305 310 315 320		
Glu Gly Lys Phe Val Thr Ser Arg Gln Ile Arg Asp Arg Leu Gln Lys 325 330 335		
Glu Leu Leu Thr Asn Val Ala Leu Arg Val Glu Asp Thr Ala Asp Ala 340 345 350		
Asp Val Phe Arg Val Ser Gly Arg Gly Glu Leu His Leu Thr Ile Leu 355 360 365		
Leu Glu Asn Met Arg Arg Glu Gly Tyr Glu Leu Ala Val Gly Lys Pro 370 375 380		
Arg Val Val Tyr Arg Asp Ile Asp Gly Gln Lys Cys Glu Pro Tyr Glu 385 390 395 400		
Asn Leu Thr Val Asp Val Pro Asp Asp Asn Gln Gly Ala Val Met Glu 405 410 415		
Glu Leu Gly Arg Arg Arg Gly Glu Leu Thr Asn Met Glu Ser Asp Gly 420 425 430		
Asn Gly Arg Thr Arg Leu Glu Tyr His Ile Pro Ala Arg Gly Leu Ile		

435 440 445
 Gly Phe Gln Gly Glu Phe Met Thr Leu Thr Arg Gly Val Gly Leu Met
 450 455 460
 Ser His Val Phe Asp Asp Tyr Ala Pro Val Lys Pro Asp Met Pro Gly
 465 470 475 480
 Arg His Asn Gly Val Leu Val Ser Gln Glu Gln Gly Glu Ala Val Ala
 485 490 495
 Tyr Ala Leu Trp Asn Leu Glu Asp Arg Gly Arg Met Phe Val Ser Pro
 500 505 510
 Asn Asp Lys Ile Tyr Glu Gly Met Ile Ile Gly Ile His Ser Arg Asp
 515 520 525
 Asn Asp Leu Val Val Asn Pro Leu Lys Gly Lys Lys Leu Thr Asn Ile
 530 535 540
 Arg Ala Ser Gly Thr Asp Glu Ala Val Arg Leu Thr Thr Pro Ile Lys
 545 550 555 560
 Leu Thr Leu Glu Gly Ala Val Glu Phe Ile Asp Asp Asp Glu Leu Val
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 580 585 590
 Leu Glu Arg Arg Arg His Phe Lys Lys Leu Asp
 595 600

<210> 615
 <211> 1812
 <212> DNA
 <213> Neisseria meningitidis

<400> 615
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 gaaggcaaat tcgtaaccag ccgcaaatc cgcgaccgcc tgcaaaaaga attgctgacc 1020

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aagctggatt ga 1812

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<210> 616
 <211> 603
 <212> PRT
 <213> *Neisseria meningitidis*

<400> 616
 Met Lys Gln Ile Arg Asn Ile Ala Ile Ile Ala His Val Asp His Gly
 1 5 10 15
 Lys Thr Thr Leu Val Asp Gln Leu Leu Arg Gln Ser Gly Thr Phe Arg
 20 25 30
 Ala Asn Gln Gln Val Asp Glu Arg Val Met Asp Ser Asn Asp Leu Glu
 35 40 45
 Lys Glu Arg Gly Ile Thr Ile Leu Ala Lys Asn Thr Ala Ile Asp Tyr
 50 55 60
 Glu Gly Tyr His Ile Asn Ile Val Asp Thr Pro Gly His Ala Asp Phe
 65 70 75 80
 Gly Gly Glu Val Glu Arg Val Leu Gly Met Val Asp Cys Val Val Leu
 85 90 95
 Leu Val Asp Ala Gln Glu Gly Pro Met Pro Gln Thr Arg Phe Val Thr
 100 105 110
 Lys Lys Ala Leu Ala Leu Gly Leu Lys Pro Ile Val Val Ile Asn Lys
 115 120 125
 Ile Asp Lys Pro Ser Ala Arg Pro Ser Trp Val Ile Asp Gln Thr Phe
 130 135 140
 Glu Leu Phe Asp Asn Leu Gly Ala Thr Asp Glu Gln Leu Asp Phe Pro
 145 150 155 160
 Ile Val Tyr Ala Ser Gly Leu Ser Gly Phe Ala Lys Leu Glu Glu Thr
 165 170 175
 Asp Glu Ser Asn Asp Met Arg Pro Leu Phe Asp Thr Ile Leu Lys Tyr
 180 185 190

Thr Pro Ala Pro Ser Gly Ser Ala Asp Glu Thr Leu Gln Leu Gln Ile
195 200 205

Ser Gln Leu Asp Tyr Asp Asn Tyr Thr Gly Arg Leu Gly Ile Gly Arg
210 215 220

Ile Leu Asn Gly Arg Ile Lys Pro Gly Gln Thr Val Ala Val Met Asn
225 230 235 240

His Asp Gln Gln Ile Ala Gln Gly Arg Ile Asn Gln Leu Leu Gly Phe
245 250 255

Lys Gly Leu Glu Arg Val Pro Leu Glu Glu Ala Glu Ala Gly Asp Ile
260 265 270

Val Ile Ile Ser Gly Ile Glu Asp Ile Gly Ile Gly Val Thr Ile Thr
275 280 285

Asp Lys Asp Asn Pro Lys Gly Leu Pro Met Leu Ser Val Asp Glu Pro
290 295 300

Thr Leu Thr Met Asp Phe Met Val Asn Thr Ser Pro Leu Ala Gly Thr
305 310 315 320

Glu Gly Lys Phe Val Thr Ser Arg Gln Ile Arg Asp Arg Leu Gln Lys
325 330 335

Glu Leu Leu Thr Asn Val Ala Leu Arg Val Glu Asp Thr Ala Asp Ala
340 345 350

Asp Val Phe Arg Val Ser Gly Arg Gly Glu Leu His Leu Thr Ile Leu
355 360 365

Leu Glu Asn Met Arg Arg Glu Gly Tyr Glu Leu Ala Val Gly Lys Pro
370 375 380

Arg Val Val Tyr Arg Asp Ile Asp Gly Gln Lys Cys Glu Pro Tyr Glu
385 390 395 400

Asn Leu Thr Val Asp Val Pro Asp Asp Asn Gln Gly Ala Val Met Glu
405 410 415

Glu Leu Gly Arg Arg Arg Gly Glu Leu Thr Asn Met Glu Ser Asp Gly
420 425 430

Asn Gly Arg Thr Arg Leu Glu Tyr His Ile Pro Ala Arg Gly Leu Ile
435 440 445

Gly Phe Gln Gly Glu Phe Met Thr Leu Thr Arg Gly Val Gly Leu Met
450 455 460

Ser His Val Phe Asp Asp Tyr Ala Pro Val Lys Pro Asp Met Pro Gly
465 470 475 480

Arg His Asn Gly Val Leu Val Ser Gln Glu Gln Gly Glu Ala Val Ala

485

490

495

Tyr Ala Leu Trp Asn Leu Glu Asp Arg Gly Arg Met Phe Val Ser Pro
500 505 510

Asn Asp Lys Ile Tyr Glu Gly Met Ile Ile Gly Ile His Ser Arg Asp
515 520 525

Asn Asp Leu Val Val Asn Pro Leu Lys Gly Lys Lys Leu Thr Asn Ile
530 535 540

Arg Ala Ser Gly Thr Asp Glu Ala Val Arg Leu Thr Thr Pro Ile Lys
545 550 555 560

Leu Thr Leu Glu Gly Ala Val Glu Phe Ile Asp Asp Asp Glu Leu Val
565 570 575

Glu Ile Thr Pro Gln Ser Ile Arg Leu Arg Lys Arg Tyr Leu Ser Glu
580 585 590

Leu Glu Arg Arg Arg His Phe Lys Lys Leu Asp
595 600

<210> 617

<211> 1812

<212> DNA

<213> *Neisseria meningitidis*

<400> 617

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cgccgtggcg aactgactaa tatggaaagc gacggcaacg gacgcaccgc cctcgaatac 1320
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ctgacgctgg aagggtgcggc cgagtttatc gacgatgatg agctggtaga aatcacgccg 1740
caatccatcc gtctgcgcaa gcgttacttg agcgaattgg aacgccgccg ccatttcaaa 1800
aagctagatt ga 1812

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<210> 618
 <211> 603
 <212> PRT
 <213> Neisseria meningitidis

<400> 618
 Met Lys Gln Ile Arg Asn Ile Ala Ile Ile Ala His Val Asp His Gly
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Lys Thr Thr Leu Val Asp Gln Leu Leu Arg Gln Ser Gly Thr Phe Arg
 20 25 30

Ala Asn Gln Gln Val Asp Glu Arg Val Met Asp Ser Asn Asp Leu Glu
 35 40 45

Lys Glu Arg Gly Ile Thr Ile Leu Ala Lys Asn Thr Ala Ile Asp Tyr
 50 55 60

Glu Gly Tyr His Ile Asn Ile Val Asp Thr Pro Gly His Ala Asp Phe
 65 70 75 80

Gly Gly Glu Val Glu Arg Val Leu Gly Met Val Asp Cys Val Val Leu
 85 90 95

Leu Val Asp Ala Gln Glu Gly Pro Met Pro Gln Thr Arg Phe Val Thr
 100 105 110

Lys Lys Ala Leu Ala Leu Gly Leu Lys Pro Ile Val Val Ile Asn Lys
 115 120 125

Ile Asp Lys Pro Ser Ala Arg Pro Ser Trp Val Ile Asp Gln Thr Phe
 130 135 140

Glu Leu Phe Asp Asn Leu Gly Ala Thr Asp Glu Gln Leu Asp Phe Pro
 145 150 155 160

Ile Val Tyr Ala Ser Gly Leu Ser Gly Phe Ala Lys Leu Glu Glu Thr
 165 170 175

Asp Glu Ser Asn Asp Met Arg Pro Leu Phe Asp Thr Ile Leu Lys Tyr
 180 185 190

Thr Pro Ala Pro Ser Gly Ser Ala Asp Glu Thr Leu Gln Leu Gln Ile
 195 200 205

Ser Gln Leu Asp Tyr Asp Asn Tyr Thr Gly Arg Leu Gly Ile Gly Arg
 210 215 220

Ile Leu Asn Gly Arg Ile Lys Pro Gly Gln Val Val Ala Val Met Asn
 225 230 235 240

His Asp Gln Gln Ile Ala Gln Gly Arg Ile Asn Gln Leu Leu Gly Phe
 245 250 255
 Lys Gly Leu Glu Arg Val Pro Leu Glu Glu Ala Glu Ala Gly Asp Ile
 260 265 270
 Val Ile Ile Ser Gly Ile Glu Asp Ile Gly Ile Gly Val Thr Ile Thr
 275 280 285
 Asp Lys Asp Asn Pro Lys Gly Leu Pro Met Leu Ser Val Asp Glu Pro
 290 295 300
 Thr Leu Thr Met Asp Phe Met Val Asn Thr Ser Pro Leu Ala Gly Thr
 305 310 315 320
 Glu Gly Lys Phe Val Thr Ser Arg Gln Ile Arg Asp Arg Leu Gln Lys
 325 330 335
 Glu Leu Leu Thr Asn Val Ala Leu Arg Val Glu Asp Thr Ala Asp Ala
 340 345 350
 Asp Val Phe Arg Val Ser Gly Arg Gly Glu Leu His Leu Thr Ile Leu
 355 360 365
 Leu Glu Asn Met Arg Arg Glu Gly Tyr Glu Leu Ala Val Gly Lys Pro
 370 375 380
 Arg Val Val Tyr Arg Asp Ile Asp Gly Gln Lys Cys Glu Pro Tyr Glu
 385 390 395 400
 Asn Leu Thr Val Asp Val Pro Asp Asp Asn Gln Gly Ala Val Met Glu
 405 410 415
 Glu Leu Gly Arg Arg Arg Gly Glu Leu Thr Asn Met Glu Ser Asp Gly
 420 425 430
 Asn Gly Arg Thr Arg Leu Glu Tyr His Ile Pro Ala Arg Gly Leu Ile
 435 440 445
 Gly Phe Gln Gly Glu Phe Met Thr Leu Thr Arg Gly Val Gly Leu Met
 450 455 460
 Ser His Val Phe Asp Asp Tyr Ala Pro Val Lys Pro Asp Met Pro Gly
 465 470 475 480
 Arg His Asn Gly Val Leu Val Ser Gln Glu Gln Gly Glu Ala Val Ala
 485 490 495
 Tyr Ala Leu Trp Asn Leu Glu Asp Arg Gly Arg Met Phe Val Ser Pro
 500 505 510
 Asn Asp Lys Ile Tyr Glu Gly Met Ile Ile Gly Ile His Ser Arg Asp
 515 520 525
 Asn Asp Leu Val Val Asn Pro Leu Lys Gly Lys Lys Leu Thr Asn Ile
 530 535 540

Arg Ala Ser Gly Thr Asp Glu Ala Val Arg Leu Thr Thr Pro Ile Lys
545 550 555 560

Leu Thr Leu Glu Gly Ala Val Glu Phe Ile Asp Asp Asp Glu Leu Val
565 570 575

Glu Ile Thr Pro Gln Ser Ile Arg Leu Arg Lys Arg Tyr Leu Ser Glu
580 585 590

Leu Glu Arg Arg Arg His Phe Lys Lys Leu Asp
595 600

<210> 619

<211> 657

<212> DNA

<213> Neisseria gonorrhoeae

<400> 619

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acgcgcgtcg ggctgctcgt ccttttcctg ctcgattacc gcctctgctg gggcatttgg 180
ggcagcgata ccgcccgttt ctcccgtttc gtccgaggtt gggcaggtat acgcggctat 240
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cttatacggg aaatccacct caactttttc aagctgctcg ccgttttttc cgcagtccac 480
atcgccgccc tcgccgcata ccgcataattc aaaaagaaaa acctcgtccg cccgatgata 540
accggttca aatacatcga aggcaaaacc tcaatccgct ttgccggcaa agccgcgctt 600
gccgccgcat tatcggttgc cgcgcttgcc gcagccgcca tctgctcct gtcctga 657

<210> 620

<211> 218

<212> PRT

<213> Neisseria gonorrhoeae

<400> 620

Met Lys Asn Lys Thr Lys Val Trp Asp Phe Pro Thr Arg Leu Phe His
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Trp Leu Leu Ala Ala Ser Leu Pro Phe Met Trp Tyr Ser Ala Lys Ala
20 25 30

Gly Gly Asp Met Leu Gln Trp His Thr Arg Val Gly Leu Leu Val Leu
35 40 45

Phe Leu Leu Val Phe Arg Leu Cys Trp Gly Ile Trp Gly Ser Asp Thr
50 55 60

Ala Arg Phe Ser Arg Phe Val Arg Gly Trp Ala Gly Ile Arg Gly Tyr
65 70 75 80

Leu Lys Asn Gly Ile Pro Glu His Ile Gln Pro Gly His Asn Pro Leu
85 90 95

Gly Ala Leu Met Val Val Ala Leu Leu Ala Ala Val Ser Phe Gln Val
 100 105 110
 Gly Thr Gly Leu Phe Ala Ala Asn Glu Asn Thr Phe Ser Thr Asn Gly
 115 120 125
 Tyr Leu Asn His Leu Val Ser Glu His Thr Gly Ser Leu Ile Arg Lys
 130 135 140
 Ile His Leu Asn Phe Phe Lys Leu Leu Ala Val Phe Ser Ala Val His
 145 150 155 160
 Ile Ala Ala Val Ala Ala Tyr Arg Ile Phe Lys Lys Lys Asn Leu Val
 165 170 175
 Arg Pro Met Ile Thr Gly Phe Lys Tyr Ile Glu Gly Lys Thr Ser Ile
 180 185 190
 Arg Phe Ala Gly Lys Ala Ala Leu Ala Ala Ala Leu Ser Val Ala Ala
 195 200 205
 Leu Ala Ala Ala Ala Ile Leu Leu Leu Ser
 210 215

<210> 621
 <211> 657
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 621
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 acgcgcgtcg ggctgttcgt ccttttcctg ctcgatattc gcctctgctg gggcatttgg 180
 ggcagcgata ccgcccgttt ttcccgtttc gtccaaggct gggcaggcat acgcggctat 240
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 cttatgcgga aaatccacct caactttttc aagctgctcg ccgttttttc tgcaatccac 480
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 gccgccgcat tatcggttgc ctcgcttgcc gcagccgcca tcctgctcct gtctctga 657

<210> 622
 <211> 218
 <212> PRT
 <213> *Neisseria meningitidis*

<400> 622
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 Trp Leu Leu Ala Ala Ser Leu Pro Phe Met Trp Tyr Ser Ala Lys Ala
 20 25 30

Gly Gly Asp Met Leu Gln Trp His Thr Arg Val Gly Leu Phe Val Leu
 35 40 45
 Phe Leu Leu Val Phe Arg Leu Cys Trp Gly Ile Trp Gly Ser Asp Thr
 50 55 60
 Ala Arg Phe Ser Arg Phe Val Gln Gly Trp Ala Gly Ile Arg Gly Tyr
 65 70 75 80
 Leu Lys Asn Gly Ile Pro Glu His Ile Gln Pro Gly His Asn Pro Leu
 85 90 95
 Gly Ala Leu Met Val Val Ala Leu Leu Ala Ala Val Ser Phe Gln Val
 100 105 110
 Gly Thr Gly Leu Phe Ala Ala Asp Glu Asn Thr Phe Ser Thr Asn Gly
 115 120 125
 Tyr Leu Asn His Leu Val Ser Glu His Thr Gly Ser Leu Met Arg Lys
 130 135 140
 Ile His Leu Asn Phe Phe Lys Leu Leu Ala Val Phe Ser Ala Ile His
 145 150 155 160
 Ile Ala Ala Val Ala Ala Tyr Arg Val Phe Lys Lys Lys Asn Leu Ile
 165 170 175
 Leu Pro Met Ile Thr Gly Phe Lys Tyr Ile Glu Gly Lys Thr Ser Ile
 180 185 190
 Arg Phe Ala Gly Lys Ala Ala Leu Ala Ala Ala Leu Ser Val Ala Ser
 195 200 205
 Leu Ala Ala Ala Ala Ile Leu Leu Leu Ser
 210 215

<210> 623

<211> 657

<212> DNA

<213> *Neisseria meningitidis*

<400> 623

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acgcgcgtcg ggctgtttat ctttttcctg ctcgatttcc gcctctgctg gggcatttgg 180
ggcagcgata ccgccggttt ctcccgtttc gtccgcggat ggtcgggtat cagagagtat 240
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cttatgcgga aaatccatct caactttttc aaactgctcg ccgttttttc cgcagtccac 480
atcgccgnog tcgccgcata ccgcgtgttc aaaaagaaaa acctcgtcct cccgatgata 540
accggcttca aatacatcga aggcaaaacc tcaatccgct ttgccggcaa agccgcgctt 600
gccgcgcgat tatcggttgc cgcgcttgcc gcagccgcca tcctgctcct gtcctga 657

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<210> 624
 <211> 218
 <212> PRT
 <213> Neisseria meningitidis

<400> 624
 Met Lys Asn Lys Thr Lys Val Trp Asp Phe Pro Thr Arg Leu Phe His
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 20 25 30
 Gly Gly Asp Met Leu Gln Trp His Thr Arg Val Gly Leu Phe Ile Leu
 35 40 45
 Phe Leu Leu Val Phe Arg Leu Cys Trp Gly Ile Trp Gly Ser Asp Thr
 50 55 60
 Ala Arg Phe Ser Arg Phe Val Arg Gly Trp Ser Gly Ile Arg Glu Tyr
 65 70 75 80
 Met Lys Asn Gly Ile Pro Glu His Val Gln Pro Gly His Asn Pro Leu
 85 90 95
 Gly Ala Leu Met Val Val Ala Leu Leu Ala Ala Val Ser Phe Gln Val
 100 105 110
 Gly Thr Gly Leu Phe Ala Ala Asp Val Asn Thr Phe Ser Thr Asn Gly
 115 120 125
 Tyr Leu Asn His Leu Val Ser Glu His Thr Gly Ser Leu Met Arg Lys
 130 135 140
 Ile His Leu Asn Phe Phe Lys Leu Leu Ala Val Phe Ser Ala Val His
 145 150 155 160
 Ile Ala Xaa Val Ala Ala Tyr Arg Val Phe Lys Lys Lys Asn Leu Val
 165 170 175
 Leu Pro Met Ile Thr Gly Phe Lys Tyr Ile Glu Gly Lys Thr Ser Ile
 180 185 190
 Arg Phe Ala Gly Lys Ala Ala Leu Ala Ala Ala Leu Ser Val Ala Ala
 195 200 205
 Leu Ala Ala Ala Ala Ile Leu Leu Leu Ser
 210 215

<210> 625
 <211> 1077
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 625
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gtgatgtttg tgctgacttt cggcgcgccg gttctgtttc tgctgctgtg cctgtatgtc 180

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atcaagctct cgtctgtggc aaagggttcgc ttcgggccgg cgttttatct gatgttcgcg 360

ctgtcggtta tgctgattcg gacttcggta tcggttcccc agcattgggt gtattttcaa 420

atcgggcggc tgacggggaa taatgcggtt cagacggcat cggaaggcaa aacctgttgc 480

agccgctgcc tgtatttccg cgacagtgcc gaatccccct gcgggggtgtg cggcgcggaa 540

ctgtacggcg gacggccgaa aagtctgagt atttcgtcgg cgttttctgac ggcggcggtt 600

gttttgattt tccctgccaa tatcctgccg attatgattt cgtccaatcc tgccgccacg 660

gaggccaaca ccatctttag cggcatcgct tatatgtggg acgagggcga caggctgatt 720

gcggcggtta ttttcagcgc gagtattttg gtgccggtgc tgaagattgc ggcaatgtcg 780

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ttctgcctgg tcgtgatttt gacgatgctg tccgcctatt atttcgaccc gcgcctgctt 1020

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<210> 626
 <211> 358
 <212> PRT
 <213> Neisseria gonorrhoeae

<400> 626

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Ala	Ala	Ser	Val	Leu	Ser	Leu	Pro	Glu	Met	Met	Arg	Leu	Met	Val	Phe
			20					25					30		
Gln	Asp	Tyr	Gly	Phe	Leu	Ala	Glu	Val	Met	Phe	Val	Leu	Thr	Phe	Gly
	35						40					45			
Ala	Pro	Val	Leu	Phe	Leu	Leu	Leu	Cys	Leu	Tyr	Val	Tyr	Ala	Ala	Leu
	50					55					60				
Ile	Arg	Lys	Gln	Ala	Tyr	Pro	Ala	Leu	Arg	Leu	Ala	Thr	Arg	Val	Met
65					70				75					80	
Val	Arg	Leu	Arg	Gln	Ala	Met	Met	Val	Asp	Val	Phe	Phe	Val	Ser	Thr
				85					90					95	
Leu	Val	Ala	Tyr	Ile	Lys	Leu	Ser	Ser	Val	Ala	Lys	Val	Arg	Phe	Gly
			100					105					110		
Pro	Ala	Phe	Tyr	Leu	Met	Phe	Ala	Leu	Ser	Val	Met	Leu	Ile	Arg	Thr
		115					120					125			
Ser	Val	Ser	Val	Pro	Gln	His	Trp	Val	Tyr	Phe	Gln	Ile	Gly	Arg	Leu
	130					135					140				
Thr	Gly	Asn	Asn	Ala	Val	Gln	Thr	Ala	Ser	Glu	Gly	Lys	Thr	Cys	Cys
145					150					155				160	
Ser	Arg	Cys	Leu	Tyr	Phe	Arg	Asp	Ser	Ala	Glu	Ser	Pro	Cys	Gly	Val
			165						170					175	

Cys Gly Ala Glu Leu Tyr Gly Gly Arg Pro Lys Ser Leu Ser Ile Ser
 180 185 190
 Ser Ala Phe Leu Thr Ala Ala Val Val Leu Tyr Phe Pro Ala Asn Ile
 195 200 205
 Leu Pro Ile Met Ile Ser Ser Asn Pro Ala Ala Thr Glu Ala Asn Thr
 210 215 220
 Ile Phe Ser Gly Ile Ala Tyr Met Trp Asp Glu Gly Asp Arg Leu Ile
 225 230 235 240
 Ala Ala Val Ile Phe Ser Ala Ser Ile Leu Val Pro Val Leu Lys Ile
 245 250 255
 Ala Ala Met Ser Val Leu Ile Ala Ala Ala Arg Phe Ala Leu Pro Ala
 260 265 270
 Gly Ala Lys Lys Leu Ser His Leu Tyr Arg Ile Thr Glu Ala Val Gly
 275 280 285
 Arg Trp Ser Met Ile Asp Ile Phe Val Ile Ile Ile Leu Met Cys Ser
 290 295 300
 Phe His Thr Tyr Ala Ala Arg Val Ile Pro Gly Ser Ala Ala Val Tyr
 305 310 315 320
 Phe Cys Leu Val Val Ile Leu Thr Met Leu Ser Ala Tyr Tyr Phe Asp
 325 330 335
 Pro Arg Leu Leu Trp Asp Lys Arg Ala Ser Asp Gly Ile Ala Phe Asn
 340 345 350
 Glu Thr Glu Lys Tyr Asp
 355

<210> 627
 <211> 1077
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 627
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 agccgctgcc tgtatttccg cgacagtgcc gaatccccct gcggcgtgtg cgggtgcggaa 540
 ctgtaccgcc gacggccgaa aagtctgagt atttcgtcgg cgtttctgac ggcggcgggt 600
 attttgtatt tccctgccaa tatcctgccg attatgattt cgtccaatcc tgccgccacg 660
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 ttctgcctgg tcgtgattct gacgatgctg tccgcctatt atttcgaccc gcgcctgctt 1020
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<210> 628
 <211> 358
 <212> PRT
 <213> *Neisseria meningitidis*

<400> 628

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Ala	Ala	Ser	Val	Leu	Ser	Leu	Pro	Glu	Met	Met	Arg	Leu	Met	Val	Phe
			20					25					30		
Gln	Asp	Tyr	Gly	Phe	Leu	Ala	Glu	Val	Met	Phe	Val	Leu	Thr	Phe	Gly
		35					40					45			
Ala	Pro	Val	Leu	Phe	Leu	Leu	Leu	Cys	Leu	Tyr	Val	Tyr	Ala	Ala	Leu
	50					55					60				
Ile	Arg	Lys	Gln	Ala	Tyr	Pro	Ala	Leu	Arg	Leu	Ala	Thr	Arg	Val	Met
65					70				75					80	
Val	Arg	Leu	Arg	Gln	Ala	Met	Met	Val	Asp	Val	Phe	Phe	Val	Ser	Thr
				85					90					95	
Leu	Val	Ala	Tyr	Ile	Lys	Leu	Ser	Ser	Val	Ala	Glu	Val	Arg	Phe	Gly
		100					105						110		
Pro	Ala	Phe	Tyr	Leu	Met	Phe	Ala	Leu	Ser	Val	Met	Leu	Ile	Arg	Thr
		115					120					125			
Ser	Val	Ser	Val	Pro	Gln	His	Trp	Val	Tyr	Phe	Gln	Ile	Gly	Arg	Leu
	130					135					140				
Thr	Gly	Asp	Asn	Ala	Val	Gln	Thr	Ala	Ser	Glu	Gly	Lys	Thr	Cys	Cys
145					150					155				160	
Ser	Arg	Cys	Leu	Tyr	Phe	Arg	Asp	Ser	Ala	Glu	Ser	Pro	Cys	Gly	Val
			165						170					175	
Cys	Gly	Ala	Glu	Leu	Tyr	Arg	Arg	Arg	Pro	Lys	Ser	Leu	Ser	Ile	Ser
		180						185					190		
Ser	Ala	Phe	Leu	Thr	Ala	Ala	Val	Ile	Leu	Tyr	Phe	Pro	Ala	Asn	Ile
		195					200					205			
Leu	Pro	Ile	Met	Ile	Ser	Ser	Asn	Pro	Ala	Ala	Thr	Glu	Val	Asn	Thr
	210					215					220				

Ile Leu Asn Gly Ile Ala Tyr Met Trp Asp Glu Gly Asp Arg Leu Ile
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 245 250 255
 Ala Ala Met Ser Val Leu Ile Ala Ser Ala Arg Phe Ala Leu Pro Thr
 260 265 270
 Gly Ala Lys Lys Leu Ser His Leu Tyr Arg Ile Thr Glu Ala Val Gly
 275 280 285
 Arg Trp Ser Met Ile Asp Ile Phe Val Ile Ile Ile Leu Met Cys Ser
 290 295 300
 Phe His Thr Tyr Ala Ala Arg Val Ile Pro Gly Ser Ala Ala Val Tyr
 305 310 315 320
 Phe Cys Leu Val Val Ile Leu Thr Met Leu Ser Ala Tyr Tyr Phe Asp
 325 330 335
 Pro Arg Leu Leu Trp Asp Lys Arg Ala Ser Asp Gly Ile Ala Phe Asn
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 Glu Thr Glu Lys His Asp
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<210> 629
 <211> 1077
 <212> DNA
 <213> Neisseria meningitidis

<400> 629
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<210> 630
 <211> 358
 <212> PRT

<213> Neisseria meningitidis

<400> 630

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Ala	Ala	Ser	Val	Leu	Ser	Leu	Pro	Glu	Met	Met	Arg	Leu	Met	Val	Phe	
			20					25					30			
Gln	Asp	Tyr	Gly	Phe	Leu	Ala	Glu	Val	Met	Phe	Val	Leu	Thr	Phe	Gly	
		35					40					45				
Ala	Pro	Val	Leu	Phe	Leu	Leu	Leu	Cys	Leu	Tyr	Val	Tyr	Ala	Ala	Leu	
	50					55					60					
Ile	Arg	Lys	Gln	Ala	Tyr	Pro	Ala	Leu	Arg	Leu	Ala	Thr	Arg	Val	Met	
65					70				75						80	
Val	Arg	Leu	Arg	Gln	Ala	Met	Met	Val	Asp	Val	Phe	Phe	Val	Ser	Thr	
				85					90					95		
Leu	Val	Ala	Tyr	Ile	Lys	Leu	Ser	Ser	Val	Ala	Glu	Val	Arg	Phe	Gly	
			100					105						110		
Ser	Ala	Phe	Tyr	Leu	Met	Phe	Ala	Leu	Ser	Val	Met	Leu	Ile	Arg	Thr	
		115					120					125				
Ser	Val	Ser	Val	Pro	Gln	His	Trp	Val	Tyr	Phe	Gln	Ile	Gly	Arg	Leu	
	130					135					140					
Thr	Gly	Asp	Asn	Ala	Val	Gln	Thr	Ala	Ser	Glu	Gly	Lys	Thr	Cys	Cys	
145					150					155					160	
Ser	Arg	Cys	Leu	Tyr	Phe	Arg	Asp	Ser	Ala	Glu	Ser	Pro	Cys	Gly	Val	
			165						170					175		
Cys	Gly	Ala	Glu	Leu	Tyr	Arg	Arg	Arg	Pro	Lys	Ser	Leu	Ser	Ile	Ser	
			180					185						190		
Ser	Ala	Phe	Leu	Thr	Ala	Ala	Val	Ile	Leu	Tyr	Phe	Pro	Ala	Asn	Ile	
		195					200					205				
Leu	Pro	Ile	Met	Ile	Ser	Ser	Asn	Pro	Ala	Ala	Thr	Glu	Val	Asn	Thr	
	210					215					220					
Ile	Leu	Asn	Gly	Ile	Ala	Tyr	Met	Trp	Asp	Glu	Gly	Asp	Arg	Leu	Ile	
225					230					235					240	
Ala	Ala	Val	Ile	Phe	Ser	Ala	Ser	Ile	Leu	Val	Pro	Val	Leu	Lys	Ile	
			245						250					255		
Ala	Ala	Met	Ser	Val	Leu	Ile	Ala	Ser	Ala	Arg	Phe	Ala	Leu	Pro	Thr	
		260						265					270			
Gly	Ala	Lys	Lys	Leu	Ser	His	Leu	Tyr	Arg	Ile	Thr	Glu	Ala	Val	Gly	
		275					280					285				

Arg Trp Ser Met Ile Asp Ile Phe Val Ile Ile Ile Leu Met Cys Ser
 290 295 300

Phe His Thr Tyr Ala Ala Arg Val Ile Pro Gly Ser Ala Ala Val Tyr
 305 310 315 320

Phe Cys Leu Val Val Ile Leu Thr Met Leu Ser Ala Tyr Tyr Phe Asp
 325 330 335

Pro Arg Leu Leu Trp Asp Lys Arg Ala Ser Asp Gly Ile Ala Phe Asn
 340 345 350

Glu Thr Glu Lys His Asp
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<210> 631

<211> 1662

<212> DNA

<213> Neisseria gonorrhoeae

<400> 631

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<210> 632

<211> 553

<212> PRT

<213> Neisseria gonorrhoeae

<400> 632

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Ala Leu Ile Ala Gly Gly Trp Leu Trp Val Lys Glu Ile Arg Asn Arg
35 40 45

Gly Pro Val Val Thr Leu Leu Met Asp Ser Ala Glu Gly Ile Glu Val
50 55 60

Asn Asn Thr Val Ile Lys Val Leu Ser Ile Asp Val Gly Arg Val Thr
65 70 75 80

Arg Ile Lys Leu Arg Asp Asp Gln Lys Gly Val Glu Val Thr Ala Gln
85 90 95

Leu Asn Ala Asp Val Ser Gly Leu Ile Arg Ser Asp Thr Gln Phe Trp
100 105 110

Val Val Lys Pro Arg Ile Asp Gln Ser Gly Val Thr Gly Leu Gly Thr
115 120 125

Leu Leu Ser Gly Ser Tyr Ile Ala Phe Thr Pro Gly Lys Ser Gly Glu
130 135 140

Ala Lys Asp Val Phe Gln Val Gln Asp Ile Pro Pro Val Thr Ala Ile
145 150 155 160

Gly Gln Ser Gly Leu Arg Leu Asn Leu Ile Gly Lys Asn Asp Arg Ile
165 170 175

Leu Asn Val Asn Ser Pro Val Leu Tyr Glu Asn Phe Met Val Gly Gln
180 185 190

Ile Glu Ser Ala His Phe Asp Pro Ser Asp Gln Ser Val His Tyr Thr
195 200 205

Ile Phe Ile Gln Ser Pro Asn Asp Lys Leu Ile His Ser Ala Ser Arg
210 215 220

Phe Trp Leu Glu Ser Gly Ile Asn Ile Glu Thr Thr Gly Ser Gly Ile
225 230 235 240

Lys Leu Asn Ser Ala Pro Leu Pro Ala Leu Leu Ser Gly Ala Ile Ser
245 250 255

Phe Asp Ser Pro Lys Thr Lys Asn Ser Lys Asn Val Lys Ser Glu Asp
260 265 270

Ser Phe Thr Leu Tyr Asp Ser Arg Ser Glu Ile Ala Asn Leu Pro Asp
275 280 285

Asp Arg Ser Leu Tyr Tyr Thr Ala Phe Phe Lys Gln Ser Val Arg Gly

290	295	300
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Val Ser Asp Val Pro Tyr Phe Asp Arg Asn Asp Ser Leu His Leu Phe 325 330 335		
Glu Asn Gly Trp Ile Pro Val Arg Ile Arg Ile Glu Pro Ser Arg Leu 340 345 350		
Glu Ile Asn Ala Asp Glu Gln Ser Lys Glu His Trp Lys Gln Gln Phe 355 360 365		
Gln Thr Ala Leu Asn Lys Gly Leu Thr Ala Thr Ile Ser Ser Asn Asn 370 375 380		
Leu Leu Thr Gly Gly Lys Met Ile Glu Leu Asn Asp Gln Pro Ser Ala 385 390 395 400		
Ser Pro Lys Leu Arg Pro His Thr Val Tyr Ala Gly Asp Thr Val Ile 405 410 415		
Ala Thr Arg Gly Gly Gly Leu Asp Asp Leu Gln Val Lys Leu Ala Asp 420 425 430		
Leu Leu Asp Lys Phe Asn Asn Leu Pro Leu Asp Lys Thr Val Ala Glu 435 440 445		
Leu Asn Gly Ser Leu Ala Glu Leu Lys Ser Ala Leu Lys Ser Ala Asn 450 455 460		
Ala Ala Leu Ser Ser Ile Asp Lys Leu Val Gly Asn Pro Gln Thr Gln 465 470 475 480		
Asn Ile Pro Asn Glu Leu Asn Gln Thr Leu Lys Glu Leu Arg Ile Thr 485 490 495		
Leu Gln Gly Val Ser Pro Gln Ser Pro Ile Tyr Gly Asp Val Gln Asn 500 505 510		
Thr Leu Gln Ser Leu Asp Lys Thr Leu Lys Asp Val Gln Pro Val Ile 515 520 525		
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<210> 633
 <211> 1662
 <212> DNA
 <213> Neisseria meningitidis

<400> 633
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<210> 634
<211> 553
<212> PRT
<213> *Neisseria meningitidis*

<400> 634
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35 40 45
Gly Pro Val Val Thr Leu Leu Met Asp Ser Ala Glu Gly Ile Glu Val
50 55 60
Asn Asn Thr Val Ile Lys Val Leu Ser Ile Asp Val Gly Arg Val Thr
65 70 75 80
Arg Ile Lys Leu Arg Asp Asp Gln Lys Gly Val Glu Val Thr Ala Gln
85 90 95
Leu Asn Ala Asp Val Ser Gly Leu Ile Arg Ser Asp Thr Gln Phe Trp
100 105 110

Val Val Lys Pro Arg Ile Asp Gln Ser Gly Val Thr Gly Leu Gly Thr
 115 120 125

Leu Leu Ser Gly Ser Tyr Ile Ala Phe Thr Pro Gly Lys Ser Asp Glu
 130 135 140

Ala Lys Asp Val Phe Gln Val Gln Asp Ile Pro Pro Val Thr Ala Ile
 145 150 155 160

Gly Gln Ser Gly Leu Arg Leu Asn Leu Ile Gly Lys Asn Asp Arg Ile
 165 170 175

Leu Asn Val Asn Ser Pro Val Leu Tyr Glu Asn Phe Met Val Gly Gln
 180 185 190

Val Glu Ser Ala His Phe Asp Pro Ser Asp Gln Ser Val His Tyr Thr
 195 200 205

Ile Phe Ile Gln Ser Pro Asn Asp Lys Leu Ile His Ser Ala Ser Arg
 210 215 220

Phe Trp Leu Glu Ser Gly Ile Asn Ile Glu Thr Thr Gly Ser Gly Ile
 225 230 235 240

Lys Leu Asn Ser Ala Pro Leu Pro Ala Leu Leu Ser Gly Ala Ile Ser
 245 250 255

Phe Asp Ser Pro Lys Thr Lys Asn Ser Lys Asn Val Lys Ser Glu Asp
 260 265 270

Ser Phe Thr Leu Tyr Asp Ser Arg Ser Glu Val Ala Asn Leu Pro Asp
 275 280 285

Asp Arg Ser Leu Tyr Tyr Thr Ala Phe Phe Lys Gln Ser Val Arg Gly
 290 295 300

Leu Thr Val Gly Ser Pro Val Glu Tyr Lys Gly Leu Asn Val Gly Val
 305 310 315 320

Val Ser Asp Val Pro Tyr Phe Asp Arg Asn Asp Ser Leu His Leu Phe
 325 330 335

Glu Asn Gly Trp Ile Pro Val Arg Ile Arg Ile Glu Pro Ser Arg Leu
 340 345 350

Glu Ile Asn Ala Asp Glu Gln Ser Lys Glu His Trp Lys Gln Gln Phe
 355 360 365

Gln Thr Ala Leu Asn Lys Gly Leu Thr Ala Thr Ile Ser Ser Asn Asn
 370 375 380

Leu Leu Thr Gly Ser Lys Met Ile Glu Leu Asn Asp Gln Pro Ser Ala
 385 390 395 400

Ser Pro Lys Leu Arg Pro His Thr Val Tyr Ala Gly Asp Thr Val Ile
 405 410 415

Ala Thr Gln Gly Gly Gly Leu Asp Asp Leu Gln Val Lys Leu Ala Asp
420 425 430

Leu Leu Asp Lys Phe Asp Lys Leu Pro Leu Asp Lys Thr Val Ala Glu
435 440 445

Leu Asn Gly Ser Leu Ala Glu Leu Lys Ser Thr Leu Lys Ser Ala Asn
450 455 460

Ala Ala Leu Ser Ser Ile Asp Lys Leu Val Gly Lys Pro Gln Thr Gln
465 470 475 480

Asn Ile Pro Asn Glu Leu Asn Gln Thr Leu Lys Glu Leu Arg Thr Thr
485 490 495

Leu Gln Gly Val Ser Pro Gln Ser Pro Ile Tyr Gly Asp Val Gln Asn
500 505 510

Thr Leu Gln Ser Leu Asp Lys Thr Leu Lys Asp Val Gln Pro Val Ile
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Asn Thr Leu Lys Glu Lys Pro Asn Ala Leu Ile Phe Asn Ser Ser Ser
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Lys Asp Pro Ile Pro Lys Gly Ser Arg
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<210> 635
<211> 1662
<212> DNA
<213> Neisseria meningitidis

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tcgcccagc tgcgaccgca taccgtttat gcaggcgata ccgttatcgc gacccagggc 1260
ggcgggtttg acgatttgca ggtcaaattg gcggatttgc tggacaagtt cgacaaactg 1320


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cctttagata agacggttgc cgaattgaac ggttcgcttg ccgagctcaa atccacactc 1380
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tcgcctcaat cgcctatcta cggcgacgta caaaatacgc tgcaaagttt ggacaaaacc 1560
ttaaagacg ttcaaccgt cattaacact ttgaaagaaa aaccaacgc gctgattttc 1620
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<210> 636
 <211> 553
 <212> PRT
 <213> Neisseria meningitidis

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<400> 636
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Arg Lys Asn Asn Thr Phe Leu Ser Ala Val Trp Leu Val Pro Leu Ile
          20             25             30

Ala Leu Ile Ala Gly Gly Trp Leu Trp Val Lys Glu Ile Arg Asn Arg
          35             40             45

Gly Pro Val Val Thr Leu Leu Met Asp Ser Ala Glu Gly Ile Glu Val
          50             55             60

Asn Asn Thr Val Ile Lys Val Leu Ser Ile Asp Val Gly Arg Val Thr
          65             70             75             80

Arg Ile Lys Leu Arg Asp Asp Gln Lys Gly Val Glu Val Thr Ala Gln
          85             90             95

Leu Asn Ala Asp Val Ser Gly Leu Ile Arg Ser Asp Thr Gln Phe Trp
          100            105            110

Val Val Lys Pro Arg Ile Asp Gln Ser Gly Val Thr Gly Leu Gly Thr
          115            120            125

Leu Leu Ser Gly Ser Tyr Ile Ala Phe Thr Pro Gly Lys Ser Asp Glu
          130            135            140

Ala Lys Asp Val Phe Gln Val Gln Asp Ile Pro Pro Val Thr Ala Ile
          145            150            155            160

Gly Gln Ser Gly Leu Arg Leu Asn Leu Ile Gly Lys Asn Asp Arg Ile
          165            170            175

Leu Asn Val Asn Ser Pro Val Leu Tyr Glu Asn Phe Met Val Gly Gln
          180            185            190

Val Glu Ser Ala His Phe Asp Pro Ser Asp Gln Ser Val His Tyr Thr
          195            200            205

Ile Phe Ile Gln Ser Pro Asn Asp Lys Leu Ile His Ser Ala Ser Arg
          210            215            220

Phe Trp Leu Glu Ser Gly Ile Asn Ile Glu Thr Thr Gly Ser Gly Ile

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225		230		235		240									
Lys	Leu	Asn	Ser	Ala	Pro	Leu	Pro	Ala	Leu	Leu	Ser	Gly	Ala	Ile	Ser
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Phe	Asp	Ser	Pro	Lys	Thr	Lys	Asn	Ser	Lys	Asn	Val	Lys	Ser	Glu	Asp
			260					265					270		
Ser	Phe	Thr	Leu	Tyr	Asp	Ser	Arg	Ser	Glu	Val	Ala	Asn	Leu	Pro	Asp
		275					280					285			
Asp	Arg	Ser	Leu	Tyr	Tyr	Thr	Ala	Phe	Phe	Lys	Gln	Ser	Val	Arg	Gly
	290					295					300				
Leu	Thr	Val	Gly	Ser	Pro	Val	Glu	Tyr	Lys	Gly	Leu	Asn	Val	Gly	Val
305					310					315				320	
Val	Ser	Asp	Val	Pro	Tyr	Phe	Asp	Arg	Asn	Asp	Ser	Leu	His	Leu	Phe
			325						330					335	
Glu	Asn	Gly	Trp	Ile	Pro	Val	Arg	Ile	Arg	Ile	Glu	Pro	Ser	Arg	Leu
		340						345					350		
Glu	Ile	Asn	Ala	Asp	Glu	Gln	Ser	Lys	Glu	His	Trp	Lys	Gln	Gln	Phe
		355					360					365			
Gln	Thr	Ala	Leu	Asn	Lys	Gly	Leu	Thr	Ala	Thr	Ile	Ser	Ser	Asn	Asn
	370					375					380				
Leu	Leu	Thr	Gly	Ser	Lys	Met	Ile	Glu	Leu	Asn	Asp	Gln	Pro	Ser	Ala
385					390					395					400
Ser	Pro	Lys	Leu	Arg	Pro	His	Thr	Val	Tyr	Ala	Gly	Asp	Thr	Val	Ile
			405						410					415	
Ala	Thr	Gln	Gly	Gly	Gly	Leu	Asp	Asp	Leu	Gln	Val	Lys	Leu	Ala	Asp
		420						425					430		
Leu	Leu	Asp	Lys	Phe	Asp	Lys	Leu	Pro	Leu	Asp	Lys	Thr	Val	Ala	Glu
		435					440					445			
Leu	Asn	Gly	Ser	Leu	Ala	Glu	Leu	Lys	Ser	Thr	Leu	Lys	Ser	Ala	Asn
	450					455					460				
Ala	Ala	Leu	Ser	Ser	Ile	Asp	Lys	Leu	Val	Gly	Lys	Pro	Gln	Thr	Gln
465					470					475					480
Asn	Ile	Pro	Asn	Glu	Leu	Asn	Gln	Thr	Leu	Lys	Glu	Leu	Arg	Thr	Thr
			485					490					495		
Leu	Gln	Gly	Val	Ser	Pro	Gln	Ser	Pro	Ile	Tyr	Gly	Asp	Val	Gln	Asn
			500					505					510		
Thr	Leu	Gln	Ser	Leu	Asp	Lys	Thr	Leu	Lys	Asp	Val	Gln	Pro	Val	Ile
		515					520					525			
Asn	Thr	Leu	Lys	Glu	Lys	Pro	Asn	Ala	Leu	Ile	Phe	Asn	Ser	Ser	Ser

530

535

540

Lys Asp Pro Ile Pro Lys Gly Ser Arg
545 550

<210> 637

<211> 1539

<212> DNA

<213> Neisseria gonorrhoeae

<400> 637

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ttggcggcaa gtttgacga tgccgcttac caaacagcag gcgcaaccgt tgccgacaaa 180
gcggcggttt gggcctgccc ttttaatttat aagggtcaacg cgccgtccga aggcgagctg 240
ccgctgctca aagaaggtca aaccatcgct agcttcctgt ggccgcgcca aaacgaggct 300
ttggtcgagg ccttgcgcg ccaagaaagtc aacgcgctgg cgatggacat ggttccccgc 360
atttcccgcg ctccaggcctt ggacgctttg tcttcaatgg caaacatcag cggctaccgc 420
gccgtgattg aagccgccaa cgcccttcggc cgtttcttca ccggtcaaat cactgccgcc 480
ggcaaagtgc cgctgcgca ggttttggtg attggcgccg gtgtggcggg tttggcggca 540
atcgggtacg caaattcgct cggcgagtg gtgcgcgctg tcgatacccg cttggaagtg 600
gcggaacaaa tcgaatcgat gggcggtaa ttcctgaaac tcgacttcct gcaagaatcg 660
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aagctctttg ccgaacaggc gaaagaagtg gacatcatca tcaccaccgc cgccattccg 780
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tccgtaaccg gcaacggcgt gaaaatcatc ggctacaccg acatggcaaa ccgccttgcc 960
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<210> 638

<211> 512

<212> PRT

<213> Neisseria gonorrhoeae

<400> 638

Met Lys Ile Gly Ile Pro Arg Glu Ser Leu Ser Gly Glu Thr Arg Val
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Ala Cys Thr Pro Ala Thr Val Ala Leu Leu Gly Lys Leu Gly Phe Glu
20 25 30

Thr Val Val Glu Ser Gly Ala Gly Leu Ala Ala Ser Leu Asp Asp Ala
35 40 45

Ala Tyr Gln Thr Ala Gly Ala Thr Val Ala Asp Lys Ala Ala Val Trp
50 55 60

Ala	Cys	Pro	Leu	Ile	Tyr	Lys	Val	Asn	Ala	Pro	Ser	Glu	Gly	Glu	Leu	65	70	75	80
Pro	Leu	Leu	Lys	Glu	Gly	Gln	Thr	Ile	Val	Ser	Phe	Leu	Trp	Pro	Arg	85	90	95	
Gln	Asn	Glu	Ala	Leu	Val	Glu	Ala	Leu	Arg	Ala	Lys	Lys	Val	Asn	Ala	100	105	110	
Leu	Ala	Met	Asp	Met	Val	Pro	Arg	Ile	Ser	Arg	Ala	Gln	Ala	Leu	Asp	115	120	125	
Ala	Leu	Ser	Ser	Met	Ala	Asn	Ile	Ser	Gly	Tyr	Arg	Ala	Val	Ile	Glu	130	135	140	
Ala	Ala	Asn	Ala	Phe	Gly	Arg	Phe	Phe	Thr	Gly	Gln	Ile	Thr	Ala	Ala	145	150	155	160
Gly	Lys	Val	Pro	Pro	Ala	Gln	Val	Leu	Val	Ile	Gly	Ala	Gly	Val	Ala	165	170	175	
Gly	Leu	Ala	Ala	Ile	Gly	Thr	Ala	Asn	Ser	Leu	Gly	Ala	Val	Val	Arg	180	185	190	
Ala	Phe	Asp	Thr	Arg	Leu	Glu	Val	Ala	Glu	Gln	Ile	Glu	Ser	Met	Gly	195	200	205	
Gly	Lys	Phe	Leu	Lys	Leu	Asp	Phe	Leu	Gln	Glu	Ser	Gly	Gly	Ser	Gly	210	215	220	
Asp	Gly	Tyr	Ala	Lys	Val	Met	Ser	Asp	Glu	Phe	Ile	Ala	Ala	Glu	Met	225	230	235	240
Lys	Leu	Phe	Ala	Glu	Gln	Ala	Lys	Glu	Val	Asp	Ile	Ile	Ile	Thr	Thr	245	250	255	
Ala	Ala	Ile	Pro	Gly	Lys	Pro	Ala	Pro	Lys	Leu	Ile	Thr	Lys	Glu	Met	260	265	270	
Val	Glu	Ser	Met	Lys	Ser	Gly	Ser	Val	Ile	Val	Asp	Leu	Ala	Ala	Thr	275	280	285	
Gly	Gly	Asn	Cys	Glu	Leu	Thr	Arg	Pro	Gly	Glu	Leu	Ser	Val	Thr	Gly	290	295	300	
Asn	Gly	Val	Lys	Ile	Ile	Gly	Tyr	Thr	Asp	Met	Ala	Asn	Arg	Leu	Ala	305	310	315	320
Gly	Gln	Ser	Ser	Gln	Leu	Tyr	Ala	Thr	Asn	Leu	Val	Asn	Leu	Thr	Lys	325	330	335	
Leu	Leu	Ser	Pro	Asn	Lys	Asp	Gly	Glu	Ile	Thr	Leu	Asp	Phe	Glu	Asp	340	345	350	
Val	Ile	Ile	Arg	Asn	Met	Thr	Val	Thr	Arg	Asp	Gly	Glu	Ile	Thr	Phe	355	360	365	

Pro Pro Pro Pro Ile Gln Val Ser Ala Arg Pro Gln Gln Thr Pro Ser
 370 375 380
 Glu Lys Ala Ala Pro Ala Ala Lys Pro Glu Pro Lys Pro Val Pro Leu
 385 390 395 400
 Trp Lys Lys Leu Ala Pro Ala Ala Ile Ala Ala Val Leu Val Leu Trp
 405 410 415
 Val Gly Ala Val Ala Pro Ala Ala Phe Leu Asn His Phe Ile Val Phe
 420 425 430
 Val Leu Ala Cys Val Ile Gly Tyr His Val Val Trp Asn Val Ser His
 435 440 445
 Ser Leu His Thr Pro Leu Met Ser Val Thr Asn Ala Ile Ser Gly Ile
 450 455 460
 Met Val Val Gly Ala Leu Leu Gln Ile Gly Gln Gly Asn Gly Phe Val
 465 470 475 480
 Ser Leu Leu Ser Phe Val Ala Ile Leu Ile Ala Gly Ile Asn Ile Phe
 485 490 495
 Gly Gly Phe Ala Val Thr Arg Arg Met Leu Asn Met Phe Lys Lys Gly
 500 505 510

<210> 639
 <211> 1542
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 639
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 ttggcggcaa gtttggaaga tgccgcttac caaacagcag gcgcaaccgt tgccgacaaa 180
 gcggcgggtt gggtctgccc ttgattttat aaggtcaacg cgccgtccga acagggaactg 240
 ccgcttttga acgaagggtc aaccatcgct agcttcctgt ggccgcgcca aaacgaggct 300
 ttggtcgaag ccttgcgcgc caagaaagtg aacgcgctgg cgatggatat ggtgccccgc 360
 atttcgcgcg cgcaggcttt ggacgctttg tcttcgatgg caaacatcag cggctaccgc 420
 gccgtaattg aagccgcca aacgttcggc cgttttcttca ccggtcaa ataccgcccgc 480
 ggcaaagtgc cgcccgcgca ggttttggtg attggtgcag gtgtggcagg tttggcggcg 540
 atcggtacgg caaactcgct cggcgcgagt gtacgcgcgt tcgatacccg cttggaagtg 600
 gcggaacaaa tcgaatcgat gggcggaag ttctgaaac tcgacttccc acaagaatcg 660
 ggcggcagcg gagacggcta cgccaaagtg atgagcgacg aatttatcgc agccgagatg 720
 aagctctttg ccgagcaggc gaaagaagtg gacatcatca tcaccaccgc cgccattccg 780
 ggcaaaccgc cgccaagct gattaccaa gaaatggtgg aaagcatgaa atccggctcc 840
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 ttgtccgtaa ccggcaacgc cgtgaaaatc atcggttaca ccgacatggc aaaccgcctt 960
 gccggacagt cttcccagct ttacgccacc aacttggtca acctgaccaa gctgttaagc 1020
 ccgaacaaag acggcgaaat cacgttggac ttcgaagacg tgattatccg caacatgacc 1080
 gttaccacgc acggcgaaat caccttccc cctccgcca ttcaagtttc cgcccagccg 1140

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cagcaaacgc cgtctgaaaa agccgtgcct gccgccaagc ccgagccaaa acccgttccc 1200
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gccatctccg gcatcatcgt cgtcggcgcg ctgctgcaaa tcggtcaggg caacggcttc 1440
gtttcgctgc tgtcgtttgt tgccatcctg attgccggca tcaacatctt cggcggcttt 1500
gcggtaacac ggcgtatgct gaatatgttt aagaaagggt aa 1542

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<210> 640
 <211> 513
 <212> PRT
 <213> *Neisseria meningitidis*

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<400> 640
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Ala Cys Thr Pro Ala Thr Val Ala Leu Leu Gly Lys Leu Gly Phe Glu
      20             25             30

Thr Val Val Glu Ser Gly Ala Gly Leu Ala Ala Ser Leu Asp Asp Ala
      35             40             45

Ala Tyr Gln Thr Ala Gly Ala Thr Val Ala Asp Lys Ala Ala Val Trp
      50             55             60

Val Cys Pro Leu Ile Tyr Lys Val Asn Ala Pro Ser Glu Gln Glu Leu
      65             70             75             80

Pro Leu Leu Asn Glu Gly Gln Thr Ile Val Ser Phe Leu Trp Pro Arg
      85             90             95

Gln Asn Glu Ala Leu Val Glu Ala Leu Arg Ala Lys Lys Val Asn Ala
      100            105            110

Leu Ala Met Asp Met Val Pro Arg Ile Ser Arg Ala Gln Ala Leu Asp
      115            120            125

Ala Leu Ser Ser Met Ala Asn Ile Ser Gly Tyr Arg Ala Val Ile Glu
      130            135            140

Ala Ala Asn Ala Phe Gly Arg Phe Phe Thr Gly Gln Ile Thr Ala Ala
      145            150            155            160

Gly Lys Val Pro Pro Ala Gln Val Leu Val Ile Gly Ala Gly Val Ala
      165            170            175

Gly Leu Ala Ala Ile Gly Thr Ala Asn Ser Leu Gly Ala Val Val Arg
      180            185            190

Ala Phe Asp Thr Arg Leu Glu Val Ala Glu Gln Ile Glu Ser Met Gly
      195            200            205

Gly Lys Phe Leu Lys Leu Asp Phe Pro Gln Glu Ser Gly Gly Ser Gly
      210            215            220

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Asp Gly Tyr Ala Lys Val Met Ser Asp Glu Phe Ile Ala Ala Glu Met
 225 230 235 240
 Lys Leu Phe Ala Glu Gln Ala Lys Glu Val Asp Ile Ile Ile Thr Thr
 245 250 255
 Ala Ala Ile Pro Gly Lys Pro Ala Pro Lys Leu Ile Thr Lys Glu Met
 260 265 270
 Val Glu Ser Met Lys Ser Gly Ser Val Ile Val Asp Leu Ala Ala Ala
 275 280 285
 Thr Gly Gly Asn Cys Glu Leu Thr Arg Pro Gly Glu Leu Ser Val Thr
 290 295 300
 Gly Asn Gly Val Lys Ile Ile Gly Tyr Thr Asp Met Ala Asn Arg Leu
 305 310 315 320
 Ala Gly Gln Ser Ser Gln Leu Tyr Ala Thr Asn Leu Val Asn Leu Thr
 325 330 335
 Lys Leu Leu Ser Pro Asn Lys Asp Gly Glu Ile Thr Leu Asp Phe Glu
 340 345 350
 Asp Val Ile Ile Arg Asn Met Thr Val Thr His Asp Gly Glu Ile Thr
 355 360 365
 Phe Pro Pro Pro Pro Ile Gln Val Ser Ala Gln Pro Gln Gln Thr Pro
 370 375 380
 Ser Glu Lys Ala Val Pro Ala Ala Lys Pro Glu Pro Lys Pro Val Pro
 385 390 395 400
 Leu Trp Lys Lys Leu Ala Pro Ala Val Ile Ala Ala Val Leu Val Leu
 405 410 415
 Trp Val Gly Ala Val Ala Pro Ala Ala Phe Leu Asn His Phe Ile Val
 420 425 430
 Phe Val Leu Ala Cys Val Ile Gly Tyr Tyr Val Val Trp Asn Val Ser
 435 440 445
 His Ser Leu His Thr Pro Leu Met Ser Val Thr Asn Ala Ile Ser Gly
 450 455 460
 Ile Ile Val Val Gly Ala Leu Leu Gln Ile Gly Gln Gly Asn Gly Phe
 465 470 475 480
 Val Ser Leu Leu Ser Phe Val Ala Ile Leu Ile Ala Gly Ile Asn Ile
 485 490 495
 Phe Gly Gly Phe Ala Val Thr Arg Arg Met Leu Asn Met Phe Lys Lys
 500 505 510

Gly

<210> 641
 <211> 1541
 <212> DNA
 <213> Neisseria meningitidis

<400> 641
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 gccaccgtcg ccctgctggg caaactgggc tttgaaaccg ttgtcgaaag cggcgaggt 120
 ttggcggcaa gtttgacga tgccgcttac caagcagcag gcgcaaccgt tgccgacaaa 180
 gcagcgggtt gggcataccc ttttaatttat aagggttaacg cgcggtccga agacgagctg 240
 ccgctgctca aagaaggaca gaccatcgtc agcttcctgt ggccgcgcca aaacgaggct 300
 ttggtcgaag ccttgcgcg ccaagaaagt aacgcgctgg caatggacat ggtgccccgc 360
 atttcgcgcg cgcaggcttt ggacgntttg tcttngatgg caaacatcag cggctaccgc 420
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 ggcaaagtgc cggccgcgca ggttttggtg attggtgcag gtgtggcagg tttggcggcg 540
 atcgggtacg gaaactcgt cggcgcgatg gtacgcgtgt tcgatacccg cctgaagtgg 600
 cggaacaatt agaatcgatg ggcggcaagt tcctgaaact cgacttcccg caagaatcgg 660
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 cgaacaaaga cggcgaaatc acgctggact tcgaagacgt gattatccgc aacatgaccg 1080
 ttaccgcgca cggcgaaatc accttcccgc ctccgcgat tcaagtttcc gcccaaccgc 1140
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 tgtggaaaaa actcgcgccc gccntnatcg ccgcgctgtt ggtactgtgg gtcggcgcg 1260
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 actatgtcgt ttggaacgtc agccactcgc tgcacacacc gctgatgtcg gtgaccaacg 1380
 ccatttccgg catcatcgtc gtcggcgcg cgtcgcaaat cggtcagggc aacggcttcg 1440
 tttcgtcgtc gtcgtttgtt gccatcctga ttgccagcat caacatcttc ggcggttct 1500
 ttgtaacgcg gcggtatgctg aatatgttta ggaaagggta a 1541

<210> 642
 <211> 513
 <212> PRT
 <213> Neisseria meningitidis

<400> 642
 Met Lys Ile Gly Ile Pro Arg Glu Ser Leu Ser Gly Glu Thr Arg Val
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 Ala Cys Thr Pro Ala Thr Val Ala Leu Leu Gly Lys Leu Gly Phe Glu
 20 25 30
 Thr Val Val Glu Ser Gly Ala Gly Leu Ala Ala Ser Leu Asp Asp Ala
 35 40 45
 Ala Tyr Gln Ala Ala Gly Ala Thr Val Ala Asp Lys Ala Ala Val Trp
 50 55 60
 Ala Tyr Pro Leu Ile Tyr Lys Val Asn Ala Pro Ser Glu Asp Glu Leu
 65 70 75 80

Pro	Leu	Leu	Lys	Glu	Gly	Gln	Thr	Ile	Val	Ser	Phe	Leu	Trp	Pro	Arg	
				85					90					95		
Gln	Asn	Glu	Ala	Leu	Val	Glu	Ala	Leu	Arg	Ala	Lys	Lys	Val	Asn	Ala	
			100					105					110			
Leu	Ala	Met	Asp	Met	Val	Pro	Arg	Ile	Ser	Arg	Ala	Gln	Ala	Leu	Asp	
		115					120					125				
Xaa	Leu	Ser	Xaa	Met	Ala	Asn	Ile	Ser	Gly	Tyr	Arg	Ala	Val	Ile	Glu	
	130					135					140					
Ala	Ala	Asn	Ala	Phe	Gly	Arg	Xaa	Phe	Thr	Gly	Gln	Ile	Thr	Ala	Ala	
145					150					155					160	
Gly	Lys	Val	Pro	Pro	Ala	Gln	Val	Leu	Val	Ile	Gly	Ala	Gly	Val	Ala	
				165				170						175		
Gly	Leu	Ala	Ala	Ile	Gly	Thr	Ala	Asn	Ser	Leu	Gly	Ala	Val	Val	Arg	
		180						185					190			
Val	Phe	Asp	Thr	Arg	Leu	Xaa	Val	Ala	Glu	Gln	Leu	Glu	Ser	Met	Gly	
		195					200					205				
Gly	Lys	Phe	Leu	Lys	Leu	Asp	Phe	Pro	Gln	Glu	Ser	Gly	Gly	Ser	Gly	
	210					215					220					
Asp	Gly	Tyr	Ala	Lys	Val	Met	Ser	Asp	Glu	Phe	Ile	Ala	Ala	Glu	Met	
225					230					235					240	
Lys	Leu	Phe	Ala	Glu	Gln	Ala	Lys	Glu	Val	Asp	Ile	Ile	Ile	Thr	Thr	
			245					250						255		
Ala	Ala	Ile	Pro	Gly	Lys	Pro	Ala	Pro	Lys	Xaa	Xaa	Xaa	Lys	Glu	Met	
			260					265						270		
Val	Glu	Ser	Met	Lys	Pro	Gly	Ser	Val	Ile	Val	Asp	Leu	Ala	Ala	Ala	
		275					280					285				
Thr	Gly	Gly	Asn	Cys	Glu	Leu	Thr	Lys	Gln	Gly	Glu	Leu	Phe	Val	Thr	
	290					295					300					
Gly	Asn	Gly	Val	Lys	Ile	Ile	Gly	Tyr	Thr	Asp	Met	Ala	Asn	Arg	Leu	
305					310					315					320	
Ala	Gly	Gln	Ser	Ser	Gln	Leu	Tyr	Ala	Thr	Asn	Leu	Val	Asn	Leu	Thr	
				325					330					335		
Lys	Leu	Leu	Ser	Pro	Asn	Lys	Asp	Gly	Glu	Ile	Thr	Leu	Asp	Phe	Glu	
			340					345					350			
Asp	Val	Ile	Ile	Arg	Asn	Met	Thr	Val	Thr	Arg	Asp	Gly	Glu	Ile	Thr	
		355					360					365				
Phe	Pro	Pro	Pro	Pro	Ile	Gln	Val	Ser	Ala	Gln	Pro	Gln	Gln	Thr	Pro	
	370					375					380					

Ser Glu Lys Ala Ala Pro Ala Ala Lys Pro Glu Pro Lys Pro Val Pro
 385 390 395 400
 Leu Trp Lys Lys Leu Ala Pro Ala Xaa Ile Ala Ala Val Leu Val Leu
 405 410 415
 Trp Val Gly Ala Val Ala Pro Ala Ala Phe Leu Asn His Phe Ile Val
 420 425 430
 Phe Val Leu Ala Cys Val Ile Gly Tyr Tyr Val Val Trp Asn Val Ser
 435 440 445
 His Ser Leu His Thr Pro Leu Met Ser Val Thr Asn Ala Ile Ser Gly
 450 455 460
 Ile Ile Val Val Gly Ala Leu Leu Gln Ile Gly Gln Gly Asn Gly Phe
 465 470 475 480
 Val Ser Leu Leu Ser Phe Val Ala Ile Leu Ile Ala Ser Ile Asn Ile
 485 490 495
 Phe Gly Gly Phe Phe Val Thr Arg Arg Met Leu Asn Met Phe Arg Lys
 500 505 510

Gly

<210> 643
 <211> 384
 <212> DNA

<213> *Neisseria gonorrhoeae*

<400> 643
 atgacttttcg cctatttggtg cattctgatt gcctgcctat tgccgctttt ttgtgcgggcg 60
 tatgccaaaa aagcggggcgg attccggttt aaagacaacc acaatcctcg cggttttctg 120
 gcacatacgc aaggcgcagc cgcccggtgcc cacgcccgcg agcaaaacgg ttttgaagcc 180
 tttgcaccgt ttgcccgcgc cgttttgacg gcacacgcaa ccggcaatgc cggacaagca 240
 accgtcaaca cgcttgccgg attgttcacg ctgttccgcc tcgcctttat ctggtgctac 300
 atcgagaca aagcagcatt gcgctcgctg atgtggggcgg gcggatttgc ctgcaccgtc 360
 ggactgtttg tcgcggtgc ttga 384

<210> 644
 <211> 127
 <212> PRT
 <213> *Neisseria gonorrhoeae*

<400> 644
 Met Thr Phe Ala Tyr Trp Cys Ile Leu Ile Ala Cys Leu Leu Pro Leu
 1 5 10 15
 Phe Cys Ala Ala Tyr Ala Lys Lys Ala Gly Gly Phe Arg Phe Lys Asp
 20 25 30

Asn His Asn Pro Arg Gly Phe Leu Ala His Thr Gln Gly Ala Ala Ala
 35 40 45
 Arg Ala His Ala Ala Gln Gln Asn Gly Phe Glu Ala Phe Ala Pro Phe
 50 55 60
 Ala Ala Ala Val Leu Thr Ala His Ala Thr Gly Asn Ala Gly Gln Ala
 65 70 75 80
 Thr Val Asn Thr Leu Ala Gly Leu Phe Ile Leu Phe Arg Leu Ala Phe
 85 90 95
 Ile Trp Cys Tyr Ile Ala Asp Lys Ala Ala Leu Arg Ser Leu Met Trp
 100 105 110
 Ala Gly Gly Phe Ala Cys Thr Val Gly Leu Phe Val Ala Ala Ala
 115 120 125

<210> 645
 <211> 384
 <212> DNA
 <213> Neisseria meningitidis

<400> 645
 atgactttcg cctattggtg tattctgatt gcctgcctat tgccgctttt ttgtgcggcg 60
 tatgccaaaa aagcgggcgg attccggttt aaagacaacc acaatccgcg cggttttcta 120
 gcgcacacgc aaggcgcgagc cgcccgtgcc cagcccgcac agcaaaacgg ttttgaagcc 180
 tttgcaccgt ttgccgccgc cgttttgacg gcacacgcaa ccggcaatgc ggcgcaatcg 240
 accatcaaca cgcttgacct cctgttcacg ctgttcggcc tcgcctttat ctggtgctat 300
 atcgccgaca aagccgctat gcgctcactg atgtgggcag gcggatttgc ctgcaccgtc 360
 gggctgtttg tcgcggctgc ttga 384

<210> 646
 <211> 127
 <212> PRT
 <213> Neisseria meningitidis

<400> 646
 Met Thr Phe Ala Tyr Trp Cys Ile Leu Ile Ala Cys Leu Leu Pro Leu
 1 5 10 15
 Phe Cys Ala Ala Tyr Ala Lys Lys Ala Gly Gly Phe Arg Phe Lys Asp
 20 25 30
 Asn His Asn Pro Arg Gly Phe Leu Ala His Thr Gln Gly Ala Ala Ala
 35 40 45
 Arg Ala His Ala Ala Gln Gln Asn Gly Phe Glu Ala Phe Ala Pro Phe
 50 55 60
 Ala Ala Ala Val Leu Thr Ala His Ala Thr Gly Asn Ala Ala Gln Ser
 65 70 75 80
 Thr Ile Asn Thr Leu Ala Cys Leu Phe Ile Leu Phe Arg Leu Ala Phe

85

90

95

Ile Trp Cys Tyr Ile Ala Asp Lys Ala Ala Met Arg Ser Leu Met Trp
 100 105 110

Ala Gly Gly Phe Ala Cys Thr Val Gly Leu Phe Val Ala Ala Ala
 115 120 125

<210> 647

<211> 384

<212> DNA

<213> *Neisseria meningitidis*

<400> 647

atgacttttcg cctattggtg tattctgatt gcctacctat tgccgctttt ttgtgcggcg 60
 tatgccaataa aagcggggcg attccggttt aaagacaacc acaatccgcg cgattttctg 120
 gcgcgcacgc aaggcacagc cgcccgtgcc cacgccgcgc agcaaaacgg ttttgaagcc 180
 tttgcaccgt ttgcagccgc cgttttgacg gcacacgcaa ccggcaatgc cggacaagca 240
 accgtcaaca cgcttgccgg cctgttcacg ctgttccgcc tcgcctttat ctggtgctac 300
 atcgagacaa aagcagcatt acgctcgctg atgtgggtgg gcggatttgt ctgcaccgtc 360
 gggctgtttg tcgtggctgc ttga 384

<210> 648

<211> 127

<212> PRT

<213> *Neisseria meningitidis*

<400> 648

Met Thr Phe Ala Tyr Trp Cys Ile Leu Ile Ala Tyr Leu Leu Pro Leu
 1 5 10 15

Phe Cys Ala Ala Tyr Ala Lys Lys Ala Gly Gly Phe Arg Phe Lys Asp
 20 25 30

Asn His Asn Pro Arg Asp Phe Leu Ala Arg Thr Gln Gly Thr Ala Ala
 35 40 45

Arg Ala His Ala Ala Gln Gln Asn Gly Phe Glu Ala Phe Ala Pro Phe
 50 55 60

Ala Ala Ala Val Leu Thr Ala His Ala Thr Gly Asn Ala Gly Gln Ala
 65 70 75 80

Thr Val Asn Thr Leu Ala Gly Leu Phe Ile Leu Phe Arg Leu Ala Phe
 85 90 95

Ile Trp Cys Tyr Ile Ala Asp Lys Ala Ala Leu Arg Ser Leu Met Trp
 100 105 110

Val Gly Gly Phe Val Cys Thr Val Gly Leu Phe Val Val Ala Ala
 115 120 125

<210> 649

<211> 582

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 649

```
atgaggaacg aggaaaaaacg cggcctgcgc cgcgaattgc gcggggcggcg ttgcgaaatg 60
gggcgagacg tgcggggcggc ggcggcgata aaaatcaacc gcctgctcaa acgttatatc 120
aagcgcggtc ggaaaaatcgg cgtgtattgg ccgatgggca aggaattgcg tttgggcggc 180
tttgtccgcg cggcgcaaaa acgcggcgca aaactctatc tgccttatat cgaaccgcac 240
acgcggcgga tgtggtttac gccgtatcct gaacgcggaa tggaacggga acgcaagcgc 300
ggtagggcga agctgcatgt ccctcagttt gcagggcgca aaatccgcgt gcacggtttg 360
tcggtattgc tcgtcccgtt tgcgggcata gaccgcgaag gctaccgttt ggggcaggca 420
ggcggtattt acgatgcgac gctttcggcg atgaaatacc gtttgcaggc gaaaaccgtg 480
ggcgtgggct ttgcctgccg gttggtggac aggtcccccac gcgaggcgca cgacctgccg 540
ctggacggtt ttgtatcgga agcggggata ttgtgttttt ag 582
```

<210> 650

<211> 193

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 650

```
Met Arg Asn Glu Glu Lys Arg Ala Leu Arg Arg Glu Leu Arg Gly Arg
  1                      5                      10                      15
```

```
Arg Ser Gln Met Gly Arg Asp Val Arg Ala Ala Ala Ala Ile Lys Ile
          20                      25                      30
```

```
Asn Arg Leu Leu Lys Arg Tyr Ile Lys Arg Gly Arg Lys Ile Gly Val
      35                      40                      45
```

```
Tyr Trp Pro Met Gly Lys Glu Leu Arg Leu Gly Gly Phe Val Arg Ala
      50                      55                      60
```

```
Ala Gln Lys Arg Gly Ala Lys Leu Tyr Leu Pro Tyr Ile Glu Pro His
      65                      70                      75                      80
```

```
Thr Arg Arg Met Trp Phe Thr Pro Tyr Pro Glu Arg Gly Met Glu Arg
          85                      90                      95
```

```
Glu Arg Lys Arg Gly Arg Ala Lys Leu His Val Pro Gln Phe Ala Gly
      100                      105                      110
```

```
Arg Lys Ile Arg Val His Gly Leu Ser Val Leu Leu Val Pro Leu Val
      115                      120                      125
```

```
Gly Ile Asp Arg Glu Gly Tyr Arg Leu Gly Gln Ala Gly Gly Tyr Tyr
      130                      135                      140
```

```
Asp Ala Thr Leu Ser Ala Met Lys Tyr Arg Leu Gln Ala Lys Thr Val
      145                      150                      155                      160
```

```
Gly Val Gly Phe Ala Cys Gln Leu Val Asp Arg Leu Pro Arg Glu Ala
          165                      170                      175
```

```
His Asp Leu Pro Leu Asp Gly Phe Val Ser Glu Ala Gly Ile Leu Cys
          180                      185                      190
```

Phe

<210> 651
<211> 582
<212> DNA
<213> *Neisseria meningitidis*

<400> 651
atgaggaacg aggaaaaacg cgccctgcgc cgcgaattgc gcgggcggcg ttcgcaaattg 60
gggcgggacg tgcggggcgc ggcaacggta aaaatcaacc acctgctcaa acgttatatt 120
aaaaaagggc ggaaaatcgg cgtgtattgg ccgatgggca aggaattgcg tttggacggc 180
tttgtccgcg cggcgcaaaa acgcggtgcg gaactctacc tgccttatat cgaaccgcgt 240
tcgcggcgga tgtggtttac gccgtatcct gccgatggag taaaacaaga acgcaagcgc 300
ggtagggcga agctgcatgt ccctcagttt gcaggtcgga aaaagcgtgt gcatgatttg 360
aacctcctgc ttgtgccagt ggtcggatg gacaggctgg gctaccgctt gggacaggca 420
ggcggctatt acgatgcgac gctttcagcg atgaaatacc gtttgcaggc aaaaaccgtg 480
ggcgtgggct ttgcctgcca gttggtggac aggctgccgc tcgaggcgca cgaccggtct 540
ttggacggtt ttgtgtcgga ggcggggata ttgtgtttt ag 582

<210> 652
<211> 193
<212> PRT
<213> *Neisseria meningitidis*

<400> 652
Met Arg Asn Glu Glu Lys Arg Ala Leu Arg Arg Glu Leu Arg Gly Arg
1 5 10 15
Arg Ser Gln Met Gly Arg Asp Val Arg Ala Ala Ala Thr Val Lys Ile
20 25 30
Asn His Leu Leu Lys Arg Tyr Ile Lys Lys Gly Arg Lys Ile Gly Val
35 40 45
Tyr Trp Pro Met Gly Lys Glu Leu Arg Leu Asp Gly Phe Val Arg Ala
50 55 60
Ala Gln Lys Arg Gly Ala Glu Leu Tyr Leu Pro Tyr Ile Glu Pro Arg
65 70 75 80
Ser Arg Arg Met Trp Phe Thr Pro Tyr Pro Ala Asp Gly Val Lys Gln
85 90 95
Glu Arg Lys Arg Gly Arg Ala Lys Leu His Val Pro Gln Phe Ala Gly
100 105 110
Arg Lys Lys Arg Val His Asp Leu Asn Leu Leu Leu Val Pro Val Val
115 120 125
Gly Met Asp Arg Leu Gly Tyr Arg Leu Gly Gln Ala Gly Gly Tyr Tyr
130 135 140
Asp Ala Thr Leu Ser Ala Met Lys Tyr Arg Leu Gln Ala Lys Thr Val

145	150								155				160			
Gly	Val	Gly	Phe	Ala	Cys	Gln	Leu	Val	Asp	Arg	Leu	Pro	Val	Glu	Ala	
				165					170					175		
His	Asp	Arg	Ser	Leu	Asp	Gly	Phe	Val	Ser	Glu	Ala	Gly	Ile	Leu	Cys	
			180					185					190			

```
<210> 653
<211> 582
<212> DNA
<213> Neisseria meningitidis
```

```
<210> 654
<211> 193
<212> PRT
<213> Neisseria meningitidis
```

Arg Lys Ile Arg Val His Gly Leu Ser Val Leu Leu Val Pro Leu Val
 115 120 125

Gly Ile Asp Arg Glu Gly Tyr Arg Leu Gly Gln Ala Gly Gly Tyr Tyr
 130 135 140

Asp Ala Thr Leu Ala Ala Met Lys Tyr Arg Leu Gln Ala Lys Thr Val
 145 150 155 160

Gly Val Gly Phe Ala Cys Gln Phe Val Asp Arg Leu Pro Arg Glu Pro
 165 170 175

His Asp Leu Leu Leu Asp Gly Phe Val Ser Glu Ala Gly Ile Leu Cys
 180 185 190

Phe

<210> 655
 <211> 912
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 655
 atgaaaacca attcagaaga actgaccgta tttgttcaag tggaggaaag cggcagcttc 60
 agccgtgagg cggagcagtt ggagatggca aattctgccg taagccgcat cgtcaaaccg 120
 ctggaggaaa agttgggcgt gaacctgctc aaccgcacca cgcggcaact caatctgacg 180
 gaagaaggcg cgcaatatatt ccgccgcgcg cagagaatcc tgcaagaaat ggcagcggcg 240
 gaaaccgaaa tgctggcagt gcacgaagta ccgcaaggcg tgttgccgct ggattccgcg 300
 atgccgatgg tgctgcatct gctggcgcgc ctggcagcaa aattcaacga acgctatccg 360
 catatccgac tttcgctcgt ttcttccgaa ggctatatca atctgattga acgcaaagtc 420
 gatattgcct tacgggccgg agaattggac gattccgggc tgcgtgcacg ccatctgttt 480
 gacagccact tccgcgtagt cgccagtcct gaatatcttag caaaacacgg cacgccacaa 540
 tctgcagaag atcttgccaa ccatcaatgt ttaggcttca cagaaccggg ttctctaaat 600
 acatggggcg ttttagatgc gcagggaaat ccctataaaa ttccaccgca ctttaccgcc 660
 agcagcggtg aaatcttacg ctcgttgtgc ctttcaagtt gcggtattgc ttgcttatca 720
 gatttttttg ttgacaacga catcactgaa ggaaagttaa ttcccctatt cgcggaacaa 780
 acctccaata aaacacaccc ctttaatgct gttattaca gcgataaagc cgtcaacctc 840
 cgcttacgcg tatttttgga ttttttagtg aagggaactgg gaaaaaatat gaatagaacg 900
 aataccaaat aa 912

<210> 656
 <211> 303
 <212> PRT
 <213> Neisseria gonorrhoeae

<400> 656
 Met Lys Thr Asn Ser Glu Glu Leu Thr Val Phe Val Gln Val Val Glu
 1 5 10 15
 Ser Gly Ser Phe Ser Arg Ala Ala Glu Gln Leu Glu Met Ala Asn Ser
 20 25 30
 Ala Val Ser Arg Ile Val Lys Arg Leu Glu Glu Lys Leu Gly Val Asn
 35 40 45

Leu Leu Asn Arg Thr Thr Arg Gln Leu Asn Leu Thr Glu Glu Gly Ala
 50 55 60
 Gln Tyr Phe Arg Arg Ala Gln Arg Ile Leu Gln Glu Met Ala Ala Ala
 65 70 75 80
 Glu Thr Glu Met Leu Ala Val His Glu Val Pro Gln Gly Val Leu Arg
 85 90 95
 Val Asp Ser Ala Met Pro Met Val Leu His Leu Leu Ala Pro Leu Ala
 100 105 110
 Ala Lys Phe Asn Glu Arg Tyr Pro His Ile Arg Leu Ser Leu Val Ser
 115 120 125
 Ser Glu Gly Tyr Ile Asn Leu Ile Glu Arg Lys Val Asp Ile Ala Leu
 130 135 140
 Arg Ala Gly Glu Leu Asp Asp Ser Gly Leu Arg Ala Arg His Leu Phe
 145 150 155 160
 Asp Ser His Phe Arg Val Val Ala Ser Pro Glu Tyr Leu Ala Lys His
 165 170 175
 Gly Thr Pro Gln Ser Ala Glu Asp Leu Ala Asn His Gln Cys Leu Gly
 180 185 190
 Phe Thr Glu Pro Gly Ser Leu Asn Thr Trp Ala Val Leu Asp Ala Gln
 195 200 205
 Gly Asn Pro Tyr Lys Ile Ser Pro His Phe Thr Ala Ser Ser Gly Glu
 210 215 220
 Ile Leu Arg Ser Leu Cys Leu Ser Ser Cys Gly Ile Ala Cys Leu Ser
 225 230 235 240
 Asp Phe Leu Val Asp Asn Asp Ile Thr Glu Gly Lys Leu Ile Pro Leu
 245 250 255
 Phe Ala Glu Gln Thr Ser Asn Lys Thr His Pro Phe Asn Ala Val Tyr
 260 265 270
 Tyr Ser Asp Lys Ala Val Asn Leu Arg Leu Arg Val Phe Leu Asp Phe
 275 280 285
 Leu Val Lys Glu Leu Gly Lys Asn Met Asn Arg Thr Asn Thr Lys
 290 295 300

<210> 657

<211> 900

<212> DNA

<213> *Neisseria meningitidis*

<400> 657

atgaaaacca attcagaaga actgaccgta tttgttcaag tgggtggaaag cggcagcttc 60

```

agccgtgctg cggagcagtt ggcgatggca aattctgccg taagccgcat cgtcaaacgg 120
ctggaggaaa agttgggtgt gaacctgctc aaccgcacca cgcggaact cagtctgacg 180
gaagaaggcg cgcaatatTT ccgccgcgcg cagagaatcc tgcaagaaat ggcagcggcg 240
gaaaccgaaa tgctggcagt gcacgaaata ccgcaaggcg tggtgagcgt ggattccgcg 300
atgccgatgg tgctgcatct gctggcgccg ctggcagcaa aattcaacga acgctatccg 360
catatccgac tttcgcctgt ttcttccgaa ggctatatca atctgattga acgcaaagtc 420
gatattgcct tacggggccg agaattggac gattccgggc tgcgtgcacg ccatctgttt 480
gacagccgct tccgcgtaat cgccagtcct gaatacctgg caaaacacgg cacgccgcaa 540
tctacagaag agcttgccgg ccaccaatgt ttaggcttca ccgaacccgg ttctctaaat 600
acatgggctg ttttagatgc gcagggaat ccctataaga tttcaccgca ctttaccgcc 660
agcagcgggtg aaatcttacg ctcgttgtgc ctttcagggt gcggtattgt ttgcttatca 720
gatttttttg ttgacaacga catcgctgaa ggaaagttaa ttcccctgct cgccgaacaa 780
acctccgata aaacacaccc ctttaatgct gtttattaca gcgataaagc cgtcaatctc 840
cgcttacgcg tatttttgga ttttttagtg gaggaactgg gaaacaatct ctgtggataa 900

```

<210> 658
 <211> 299
 <212> PRT
 <213> Neisseria meningitidis

<400> 658

Met	Lys	Thr	Asn	Ser	Glu	Glu	Leu	Thr	Val	Phe	Val	Gln	Val	Val	Glu
1				5					10					15	
Ser	Gly	Ser	Phe	Ser	Arg	Ala	Ala	Glu	Gln	Leu	Ala	Met	Ala	Asn	Ser
			20					25					30		
Ala	Val	Ser	Arg	Ile	Val	Lys	Arg	Leu	Glu	Glu	Lys	Leu	Gly	Val	Asn
		35					40					45			
Leu	Leu	Asn	Arg	Thr	Thr	Arg	Gln	Leu	Ser	Leu	Thr	Glu	Glu	Gly	Ala
	50					55					60				
Gln	Tyr	Phe	Arg	Arg	Ala	Gln	Arg	Ile	Leu	Gln	Glu	Met	Ala	Ala	Ala
65					70				75						80
Glu	Thr	Glu	Met	Leu	Ala	Val	His	Glu	Ile	Pro	Gln	Gly	Val	Leu	Ser
			85					90						95	
Val	Asp	Ser	Ala	Met	Pro	Met	Val	Leu	His	Leu	Leu	Ala	Pro	Leu	Ala
		100						105					110		
Ala	Lys	Phe	Asn	Glu	Arg	Tyr	Pro	His	Ile	Arg	Leu	Ser	Leu	Val	Ser
	115						120					125			
Ser	Glu	Gly	Tyr	Ile	Asn	Leu	Ile	Glu	Arg	Lys	Val	Asp	Ile	Ala	Leu
130						135						140			
Arg	Ala	Gly	Glu	Leu	Asp	Asp	Ser	Gly	Leu	Arg	Ala	Arg	His	Leu	Phe
145					150				155						160
Asp	Ser	Arg	Phe	Arg	Val	Ile	Ala	Ser	Pro	Glu	Tyr	Leu	Ala	Lys	His
			165					170						175	
Gly	Thr	Pro	Gln	Ser	Thr	Glu	Glu	Leu	Ala	Gly	His	Gln	Cys	Leu	Gly

180 185 190
 Phe Thr Glu Pro Gly Ser Leu Asn Thr Trp Ala Val Leu Asp Ala Gln
 195 200 205
 Gly Asn Pro Tyr Lys Ile Ser Pro His Phe Thr Ala Ser Ser Gly Glu
 210 215 220
 Ile Leu Arg Ser Leu Cys Leu Ser Gly Cys Gly Ile Val Cys Leu Ser
 225 230 235 240
 Asp Phe Leu Val Asp Asn Asp Ile Ala Glu Gly Lys Leu Ile Pro Leu
 245 250 255
 Leu Ala Glu Gln Thr Ser Asp Lys Thr His Pro Phe Asn Ala Val Tyr
 260 265 270
 Tyr Ser Asp Lys Ala Val Asn Leu Arg Leu Arg Val Phe Leu Asp Phe
 275 280 285
 Leu Val Glu Glu Leu Gly Asn Asn Leu Cys Gly
 290 295

<210> 659
 <211> 900
 <212> DNA
 <213> Neisseria meningitidis

<400> 659
 atgaaaacca attcagaaga actgaccgta tttgttcaag tgggtggaaag cggcagcttc 60
 agccgtgcgg cggagcagtt ggcgatggca aattctgccg taagccgcat cgtcaaacgg 120
 ctggaggaaa agttgggtgt gaacctgctc aaccgcacca cgcggcaact cagtctgacg 180
 gaagaaggcg cgcaatatatt ccgcccgcgcg cagagaatcc tgcaagaaat ggcagcggcg 240
 gaaaccgaaa tgctggcagt gcacgaaata ccgcaaggcg tgttgccggt ggattccgcg 300
 atgccgatgg tgctgcatct gctggcgccg ctggcagcaa aattcaacga acgctatccg 360
 catatccgac tttcgctcgt ttcttccgaa ggctatatca atctgattga acgcaaagtc 420
 gatattgcct tacggggccgg agaattggac gattccgggc tgcgtgcacg ccatctgttt 480
 gacagccgct tccgcgtaat cgccagtcct gaatacctgg caaaacacgg cacgccgcaa 540
 tctacagaag agcttgccgg ccaccaatgt ttaggcttca ccgaaccggg ttctctaaat 600
 acatggggcg ttttagatgc gcagggaaat ccctataaga tttcaccgca ctttaccgcc 660
 agcagcggtg aaatcttacg ctcggtgtgc ctttcagggt gcggtattgc ttgcttatca 720
 gatttttttg ttgacaacga catcgctgaa ggaaagttaa ttcccctgct cgccgaacaa 780
 acctccaata aaacgcaccc ctttaatgct gtttattaca gcgataaagc cgtcaacctc 840
 cgcttacgcg tatttttgga ttttttagtg gaggaactgg gaaacaatct ctgtggataa 900

<210> 660
 <211> 299
 <212> PRT
 <213> Neisseria meningitidis

<400> 660
 Met Lys Thr Asn Ser Glu Glu Leu Thr Val Phe Val Gln Val Val Glu
 1 5 10 15
 Ser Gly Ser Phe Ser Arg Ala Ala Glu Gln Leu Ala Met Ala Asn Ser

<213> Neisseria gonorrhoeae

<400> 661

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atggacattc tggacaaact ggtcgatctc gcccaattga cgggcagtgc ggatgtgcag 60
tgccttttgg gcggaacaat gcatgaaacc ttgcaacgcg aagggctggt acacattggt 120
acggcggggca gcggttatct ctgcatcgac ggcgaaactt ccccgctcc ggtcggcacg 180
ggcgatattg tatttttccc gcgcggcttg ggtcatgtgt tgagccacga cggaaaatac 240
ggagaaagt tacaaccgga catacgacaa aacggcacat ttatgggtcaa acagtgcggc 300
aacgggctgg atatgagcct gttttgcgcc cgtttccgct acgacacca cgccgatttg 360
atgaacgggc tgccggaaac cgtttttctg aacattgccc atccaagttt gcagtatgtg 420
gtttcaatgc tgcaactgga aagcgaaaaa cctttgacgg ggacggtttc cgtgggtcaac 480
gcattaccgt ccgtcctgct ggtgcttata ctgcgcgcct atctcgaaca ggataaggat 540
gtcgaactct cgggcgtatt gaaaggtttg caggacaaac gtttgggaca tttgatccaa 600
aaggtgatag acaaaccgga agacgaatgg aatattgaca aaatggttgc cgccgccaat 660
atgtcgcgcg cgcaactgat gcgcgcgttc aaaagccaag tcggactcag cccgcacgcc 720
tttgtgaacc atatccgcct gcaaaaaggc gcattgctgc tgaagaaaac cccggattcg 780
gttttgagg tcgcgctgtc ggtgggcttt cagtcggaaa cgcatttcgg caaggcgttc 840
aaacggcaat atcacgtttc gccggggcaa taccggaaag aaggcgggca aaaataa 897
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<210> 662

<211> 298

<212> PRT

<213> Neisseria gonorrhoeae

<400> 662

```
Met Asp Ile Leu Asp Lys Leu Val Asp Leu Ala Gln Leu Thr Gly Ser
  1              5              10              15

Ala Asp Val Gln Cys Leu Leu Gly Gly Gln Trp His Glu Thr Leu Gln
      20              25              30

Arg Glu Gly Leu Val His Ile Val Thr Ala Gly Ser Gly Tyr Leu Cys
      35              40              45

Ile Asp Gly Glu Thr Ser Pro Arg Pro Val Gly Thr Gly Asp Ile Val
      50              55              60

Phe Phe Pro Arg Gly Leu Gly His Val Leu Ser His Asp Gly Lys Tyr
      65              70              75              80

Gly Glu Ser Leu Gln Pro Asp Ile Arg Gln Asn Gly Thr Phe Met Val
      85              90              95

Lys Gln Cys Gly Asn Gly Leu Asp Met Ser Leu Phe Cys Ala Arg Phe
      100             105             110

Arg Tyr Asp Thr His Ala Asp Leu Met Asn Gly Leu Pro Glu Thr Val
      115             120             125

Phe Leu Asn Ile Ala His Pro Ser Leu Gln Tyr Val Val Ser Met Leu
      130             135             140

Gln Leu Glu Ser Glu Lys Pro Leu Thr Gly Thr Val Ser Val Val Asn
      145             150             155             160

Ala Leu Pro Ser Val Leu Leu Val Leu Ile Leu Arg Ala Tyr Leu Glu
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165	170	175
Gln Asp Lys Asp Val Glu Leu Ser Gly Val Leu Lys Gly Trp Gln Asp		
180	185	190
Lys Arg Leu Gly His Leu Ile Gln Lys Val Ile Asp Lys Pro Glu Asp		
195	200	205
Glu Trp Asn Ile Asp Lys Met Val Ala Ala Ala Asn Met Ser Arg Ala		
210	215	220
Gln Leu Met Arg Arg Phe Lys Ser Gln Val Gly Leu Ser Pro His Ala		
225	230	235
Phe Val Asn His Ile Arg Leu Gln Lys Gly Ala Leu Leu Leu Lys Lys		
245	250	255
Thr Pro Asp Ser Val Leu Glu Val Ala Leu Ser Val Gly Phe Gln Ser		
260	265	270
Glu Thr His Phe Gly Lys Ala Phe Lys Arg Gln Tyr His Val Ser Pro		
275	280	285
Gly Gln Tyr Arg Lys Glu Gly Gly Gln Lys		
290	295	

<210> 663
 <211> 906
 <212> DNA
 <213> Neisseria meningitidis

<400> 663
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 tgccttttgg gcggacaatg gtcggtacgg catgaaacct tgcaacgcga aggattggta 120
 cacattgtta catcgggcag cggctatctc tgcacgcagc gcgaaacttc cccgcgtccg 180
 gtcagtacag gggatattgt atttttcccg cgcggcttgg gtcattgtgt gagccacgac 240
 ggaaaatgcg gagaaagtgt acaaccggat atgcggcagc acggtgctgt tacgggtcaag 300
 cagtgccgca acggacagga tatgagcctg ttttgccgcc gtttccgcta cgacacccac 360
 gccgatttga tgaacgggct gcctgaaacc gtttttctga acattgcccc tccgagttta 420
 cagtattgtg tttcaatgct gcaactggaa agcaaaaaac ctttgacggg gacggtttcc 480
 atgggtcaacg cattgtcgtc cgtcctgctg gtgcttatcc tgcgcgccta tctcgaacag 540
 gataaggatg tcgaactctc gggcgtattg aaagggttggc aggacaaacg tttgggacat 600
 ttaatccaaa aggtgataga caaacgggaa gaggaatgga atgtcgacaa aatgggtggc 660
 gctgcccaata tgtcgcgcgc gcaactgatg cgcggtttca aaagccgggt cggactcagc 720
 ccgcacgcct ttgtgaacca tatccgcctg caaaaaggcg cgttgctgct gaaaaaaaac 780
 ccggattcgg ttttgcgtgt cgcactgtcg gtaggctttc agtcggaaac gcacttcggc 840
 aaggcgttca aacggcaata tcacgtttcg ccgggtcaat accggaaaga aggcgggcaa 900
 aaataa 906

<210> 664
 <211> 301
 <212> PRT
 <213> Neisseria meningitidis
 <400> 664

Met	Asp	Ile	Leu	Asp	Lys	Leu	Val	Asp	Phe	Ala	Gln	Leu	Thr	Gly	Ser	
1				5					10					15		
Val	Asp	Val	Gln	Cys	Leu	Leu	Gly	Gly	Gln	Trp	Ser	Val	Arg	His	Glu	
			20					25					30			
Thr	Leu	Gln	Arg	Glu	Gly	Leu	Val	His	Ile	Val	Thr	Ser	Gly	Ser	Gly	
		35					40					45				
Tyr	Leu	Cys	Ile	Asp	Gly	Glu	Thr	Ser	Pro	Arg	Pro	Val	Ser	Thr	Gly	
	50					55					60					
Asp	Ile	Val	Phe	Phe	Pro	Arg	Gly	Leu	Gly	His	Val	Leu	Ser	His	Asp	
65					70					75					80	
Gly	Lys	Cys	Gly	Glu	Ser	Leu	Gln	Pro	Asp	Met	Arg	Gln	His	Gly	Ala	
				85					90					95		
Phe	Thr	Val	Lys	Gln	Cys	Gly	Asn	Gly	Gln	Asp	Met	Ser	Leu	Phe	Cys	
			100					105						110		
Ala	Arg	Phe	Arg	Tyr	Asp	Thr	His	Ala	Asp	Leu	Met	Asn	Gly	Leu	Pro	
		115					120					125				
Glu	Thr	Val	Phe	Leu	Asn	Ile	Ala	His	Pro	Ser	Leu	Gln	Tyr	Val	Val	
	130					135						140				
Ser	Met	Leu	Gln	Leu	Glu	Ser	Lys	Lys	Pro	Leu	Thr	Gly	Thr	Val	Ser	
145					150					155					160	
Met	Val	Asn	Ala	Leu	Ser	Ser	Val	Leu	Leu	Val	Leu	Ile	Leu	Arg	Ala	
				165					170					175		
Tyr	Leu	Glu	Gln	Asp	Lys	Asp	Val	Glu	Leu	Ser	Gly	Val	Leu	Lys	Gly	
		180						185					190			
Trp	Gln	Asp	Lys	Arg	Leu	Gly	His	Leu	Ile	Gln	Lys	Val	Ile	Asp	Lys	
		195					200						205			
Pro	Glu	Asp	Glu	Trp	Asn	Val	Asp	Lys	Met	Val	Ala	Ala	Ala	Asn	Met	
	210					215					220					
Ser	Arg	Ala	Gln	Leu	Met	Arg	Arg	Phe	Lys	Ser	Arg	Val	Gly	Leu	Ser	
225					230					235					240	
Pro	His	Ala	Phe	Val	Asn	His	Ile	Arg	Leu	Gln	Lys	Gly	Ala	Leu	Leu	
				245				250						255		
Leu	Lys	Lys	Asn	Pro	Asp	Ser	Val	Leu	Ser	Val	Ala	Leu	Ser	Val	Gly	
			260					265					270			
Phe	Gln	Ser	Glu	Thr	His	Phe	Gly	Lys	Ala	Phe	Lys	Arg	Gln	Tyr	His	
		275					280					285				
Val	Ser	Pro	Gly	Gln	Tyr	Arg	Lys	Glu	Gly	Gly	Gln	Lys				
	290					295					300					

<210> 665
 <211> 906
 <212> DNA
 <213> Neisseria meningitidis

<400> 665
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 cacattgtta catcgggcag cggctatctc tgcacgcagc gcgaaacttc cccgcgtccg 180
 gtcagtacag gggatattgt atttttcccg cgcggttgg gtcattgtgt gagccacgac 240
 ggaaaatgcg gagaaagttt acaaccggat atgcggcagc acggtgcgtt tacgggtcaag 300
 cagtgcggca acggacagga tatgagcctg ttttgcgccc gtttccgcta cgacacccac 360
 gccgatttga tgaacgggct gcctgaaacc gtttttctga acattgcccc tccgagttta 420
 cagtatgtgg tttcaatgct gcaactggaa agcaaaaaac ctttgacggg gacggtttcc 480
 atggtcaacg cattgtcgtc cgtcctgctg gtgcttatcc tgcgcgccta tctcgaacag 540
 gataaggatg tcgaactctc gggcgtattg aaaggttggc aggacaaacg tttgggacat 600
 ttaatccaaa aggtgataga caaacgggaa gacgaatgga atgtcgacaa aatgggtggc 660
 gctgccaaata tgtcgcgcgc gcaactgatg cgccgtttca aaagccgggt cggactcagc 720
 ccgcacgcct ttgtgaacca tatccgcctg caaaaaggcg cgttgctgct gaaaaaaaac 780
 ccggattcgg ttttgcggt cgcaactgct gtaggctttc agtcggaaac gcacttcggc 840
 aaggcgttca aacggcaata tcacgtttcg ccgggtcaat accggaaaga aggcgggcaa 900
 aaataa 906

<210> 666
 <211> 301
 <212> PRT
 <213> Neisseria meningitidis

<400> 666
 Met Asp Ile Leu Asp Lys Leu Val Asp Phe Ala Gln Leu Thr Gly Ser
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 Val Asp Val Gln Cys Leu Leu Gly Gly Gln Trp Ser Val Arg His Glu
 20 25 30
 Thr Leu Gln Arg Glu Gly Leu Val His Ile Val Thr Ser Gly Ser Gly
 35 40 45
 Tyr Leu Cys Ile Asp Gly Glu Thr Ser Pro Arg Pro Val Ser Thr Gly
 50 55 60
 Asp Ile Val Phe Phe Pro Arg Gly Leu Gly His Val Leu Ser His Asp
 65 70 75 80
 Gly Lys Cys Gly Glu Ser Leu Gln Pro Asp Met Arg Gln His Gly Ala
 85 90 95
 Phe Thr Val Lys Gln Cys Gly Asn Gly Gln Asp Met Ser Leu Phe Cys
 100 105 110
 Ala Arg Phe Arg Tyr Asp Thr His Ala Asp Leu Met Asn Gly Leu Pro
 115 120 125
 Glu Thr Val Phe Leu Asn Ile Ala His Pro Ser Leu Gln Tyr Val Val
 130 135 140

Ser Met Leu Gln Leu Glu Ser Lys Lys Pro Leu Thr Gly Thr Val Ser
145 150 155 160

Met Val Asn Ala Leu Ser Ser Val Leu Leu Val Leu Ile Leu Arg Ala
165 170 175

Tyr Leu Glu Gln Asp Lys Asp Val Glu Leu Ser Gly Val Leu Lys Gly
180 185 190

Trp Gln Asp Lys Arg Leu Gly His Leu Ile Gln Lys Val Ile Asp Lys
195 200 205

Pro Glu Asp Glu Trp Asn Val Asp Lys Met Val Ala Ala Ala Asn Met
210 215 220

Ser Arg Ala Gln Leu Met Arg Arg Phe Lys Ser Arg Val Gly Leu Ser
225 230 235 240

Pro His Ala Phe Val Asn His Ile Arg Leu Gln Lys Gly Ala Leu Leu
245 250 255

Leu Lys Lys Asn Pro Asp Ser Val Leu Ser Val Ala Leu Ser Val Gly
260 265 270

Phe Gln Ser Glu Thr His Phe Gly Lys Ala Phe Lys Arg Gln Tyr His
275 280 285

Val Ser Pro Gly Gln Tyr Arg Lys Glu Gly Gly Gln Lys
290 295 300

<210> 667

<211> 903

<212> DNA

<213> Neisseria gonorrhoeae

<400> 667

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ttcaccgtta tgaacgtatt gattaaagag gcatcggcaa aatttgccct cggcagcggc 120
gaattggtct tttggcgcat gctgttttca accgttacgc tcggtgctgc cgccgtattg 180
cggcgcgaca ccttccgcac gccccattgg aaaaaccact taaaccgcag tatggtcggg 240
acggggggcga tgctgctgct gttttacgcg gtaacgcac tcgctttgac aaccggcggt 300
accctgagtt acacctcgtc gatttttttg gcggtatttt ccttcctgat tttgaaagaa 360
cggatttccg tttacacgca ggcggtgctg ctccctgggt ttgccggcgt ggtattgctg 420
cttaatccct cgttccgcag cggtcaggaa ccggcggcac tcgccgggct ggccggcggc 480
gcgatgtccg gctggggcgta tttgaaagtg cgcgaactgt ctttggcggg cgaacccggc 540
tggcgcgtcg tgttttacct ttccgcaacc ggcgtggcga tgctgctcggg ttgggcgacg 600
ctgaccggct ggcacaccct gtcctttcca tcggcagttt atctgtcggg catcggcgctg 660
tccgcgctga ttgcccaact gtcgatgacg cgcgcctaca aagtcggcga caaattcacg 720
gttgctcgc tttcctatat gaccgtcgtc ttttccgccc tgtctgccgc attttttctg 780
ggcgaagagc ttttctggca ggaaatactc ggatgtgca tcattatcct cagcggcatt 840
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taa 903
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<210> 668

<211> 300

<212> PRT

<213> Neisseria gonorrhoeae

<400> 668

Met Asp Thr Ala Lys Lys Asp Ile Leu Gly Ser Gly Trp Met Leu Val
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Ala Ala Ala Cys Phe Thr Val Met Asn Val Leu Ile Lys Glu Ala Ser
20 25 30

Ala Lys Phe Ala Leu Gly Ser Gly Glu Leu Val Phe Trp Arg Met Leu
35 40 45

Phe Ser Thr Val Thr Leu Gly Ala Ala Ala Val Leu Arg Arg Asp Thr
50 55 60

Phe Arg Thr Pro His Trp Lys Asn His Leu Asn Arg Ser Met Val Gly
65 70 75 80

Thr Gly Ala Met Leu Leu Leu Phe Tyr Ala Val Thr His Leu Pro Leu
85 90 95

Thr Thr Gly Val Thr Leu Ser Tyr Thr Ser Ser Ile Phe Leu Ala Val
100 105 110

Phe Ser Phe Leu Ile Leu Lys Glu Arg Ile Ser Val Tyr Thr Gln Ala
115 120 125

Val Leu Leu Leu Gly Phe Ala Gly Val Val Leu Leu Leu Asn Pro Ser
130 135 140

Phe Arg Ser Gly Gln Glu Pro Ala Ala Leu Ala Gly Leu Ala Gly Gly
145 150 155 160

Ala Met Ser Gly Trp Ala Tyr Leu Lys Val Arg Glu Leu Ser Leu Ala
165 170 175

Gly Glu Pro Gly Trp Arg Val Val Phe Tyr Leu Ser Ala Thr Gly Val
180 185 190

Ala Met Ser Ser Val Trp Ala Thr Leu Thr Gly Trp His Thr Leu Ser
195 200 205

Phe Pro Ser Ala Val Tyr Leu Ser Gly Ile Gly Val Ser Ala Leu Ile
210 215 220

Ala Gln Leu Ser Met Thr Arg Ala Tyr Lys Val Gly Asp Lys Phe Thr
225 230 235 240

Val Ala Ser Leu Ser Tyr Met Thr Val Val Phe Ser Ala Leu Ser Ala
245 250 255

Ala Phe Phe Leu Gly Glu Glu Leu Phe Trp Gln Glu Ile Leu Gly Met
260 265 270

Cys Ile Ile Ile Leu Ser Gly Ile Leu Ser Ser Ile Arg Pro Ile Ala

275

280

285

Phe Lys Gln Arg Leu Gln Ala Leu Phe Arg Gln Arg
 290 295 300

<210> 669
 <211> 903
 <212> DNA
 <213> Neisseria meningitidis

<400> 669
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 tttaccatta tgaacgtatt gattaaagag gcatcggcaa aatttgccct cggcagcggc 120
 gaattggtct tttggcgcac gctgttttca accgttgccg tcggggctgc cgcggtattg 180
 cgtcgggaca mcttccgcac gccccattgg aaaaaccact taaaccgcag tatggtcggg 240
 acggggggcga tgctgctgct gttttacgcg gtaacgcac tcgctttggc cactggcggt 300
 accctgagtt acacctcgtc gatttttttg gcggtatttt ccttcctgat tttgaaagaa 360
 cggattttccg tttacacgca ggcggtgctg ctccttgggt ttgccggcgt ggtattgctg 420
 cttaatccct cgttccgcag cggtcaggaa acggcggcac tcgccgggct ggcggggcggc 480
 gcgatgtccg gctgggcgta tttgaaagtgc cgcgaactgt ctttggcggg cgaaccgcgc 540
 tggcgcgtcg tgttttacct ttccgtgaca ggtgtggcga tgctgctcgt ttgggcgacg 600
 ctgaccggct ggcacaccct gtccctttcca tcggcagttt atctgtcgtg catcggcggtg 660
 tccgcgctga ttgcccaact gtcgatgacg cgcgcctaca aagtcggcga caaattcacg 720
 gttgcctcgc tttcctatat gaccgtcggt ttttccgctc tgtctgccgc attttttctg 780
 ggcgaagagc ttttctggca ggaaatactc ggtatgtgca tcatcatcct cagcgggtatt 840
 ttgagcagca tccgccccac tgccttcaaa cagcggctgc aatccctggt ccgccaaaga 900
 taa 903

<210> 670
 <211> 300
 <212> PRT
 <213> Neisseria meningitidis

<400> 670
 Met Asp Thr Ala Lys Lys Asp Ile Leu Gly Ser Gly Trp Met Leu Val
 1 5 10 15
 Ala Ala Ala Cys Phe Thr Ile Met Asn Val Leu Ile Lys Glu Ala Ser
 20 25 30
 Ala Lys Phe Ala Leu Gly Ser Gly Glu Leu Val Phe Trp Arg Met Leu
 35 40 45
 Phe Ser Thr Val Ala Leu Gly Ala Ala Ala Val Leu Arg Arg Asp Xaa
 50 55 60
 Phe Arg Thr Pro His Trp Lys Asn His Leu Asn Arg Ser Met Val Gly
 65 70 75 80
 Thr Gly Ala Met Leu Leu Leu Phe Tyr Ala Val Thr His Leu Pro Leu
 85 90 95
 Ala Thr Gly Val Thr Leu Ser Tyr Thr Ser Ser Ile Phe Leu Ala Val
 100 105 110

Phe	Ser	Phe	Leu	Ile	Leu	Lys	Glu	Arg	Ile	Ser	Val	Tyr	Thr	Gln	Ala
		115					120					125			
Val	Leu	Leu	Leu	Gly	Phe	Ala	Gly	Val	Val	Leu	Leu	Leu	Asn	Pro	Ser
	130					135					140				
Phe	Arg	Ser	Gly	Gln	Glu	Thr	Ala	Ala	Leu	Ala	Gly	Leu	Ala	Gly	Gly
145					150					155					160
Ala	Met	Ser	Gly	Trp	Ala	Tyr	Leu	Lys	Val	Arg	Glu	Leu	Ser	Leu	Ala
				165					170					175	
Gly	Glu	Pro	Gly	Trp	Arg	Val	Val	Phe	Tyr	Leu	Ser	Val	Thr	Gly	Val
			180					185					190		
Ala	Met	Ser	Ser	Val	Trp	Ala	Thr	Leu	Thr	Gly	Trp	His	Thr	Leu	Ser
		195					200					205			
Phe	Pro	Ser	Ala	Val	Tyr	Leu	Ser	Cys	Ile	Gly	Val	Ser	Ala	Leu	Ile
	210					215					220				
Ala	Gln	Leu	Ser	Met	Thr	Arg	Ala	Tyr	Lys	Val	Gly	Asp	Lys	Phe	Thr
225					230					235					240
Val	Ala	Ser	Leu	Ser	Tyr	Met	Thr	Val	Val	Phe	Ser	Ala	Leu	Ser	Ala
				245					250					255	
Ala	Phe	Phe	Leu	Gly	Glu	Glu	Leu	Phe	Trp	Gln	Glu	Ile	Leu	Gly	Met
			260					265					270		
Cys	Ile	Ile	Ile	Leu	Ser	Gly	Ile	Leu	Ser	Ser	Ile	Arg	Pro	Thr	Ala
	275						280					285			
Phe	Lys	Gln	Arg	Leu	Gln	Ser	Leu	Phe	Arg	Gln	Arg				
	290					295					300				

<210> 671
 <211> 903
 <212> DNA
 <213> Neisseria meningitidis

<400> 671
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 gaattggtct tttggcgcac gctgttttca accgttgccg tcggggctgc cgccgtattg 180
 cgctcgggaca ccttccgcac gcccatttg aaaaaccact taaaccgcag tatggctcggg 240
 acggggggcga tgctgctgct gttttacgcg gtaacgcac tgcccttggc caccggcggt 300
 accctgagtt acacctcgtc gatttttttg gcggtatttt ccttcctgat tttgaaagaa 360
 cggatttccg tttacacgca ggccgtgctg ctcttgggt ttgccggcgt ggtattgctg 420
 cttaatccct cgttccgcag cggtcaggaa acggcggcac tcgccgggct ggccggcggc 480
 gcgatgtccg gctggggcgt tttgaaagt gcgcgaactgt ctttggcggg cgaaccggc 540
 tggcgcgctc tgttttacct ttccgtgaca ggtgtggcga tgtcatcggg ttgggcgacg 600
 ctgaccggct ggcacaccct gtcctttcca tcggcagttt atctgtcgtg catcggcggtg 660
 tccgcgctga ttgcccaact gtcgatgacg cgcgcctaca aagtcggcga caaattcacg 720
 gttgcctcgc tttcctatat gaccgtcgtt ttttccgctc tgtctgccgc attttttctg 780
 gccgaagagc ttttctggca ggaaatactc ggtatgtgca tcatcatcct cagcgggtatt 840

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 taa 903

<210> 672
 <211> 300
 <212> PRT
 <213> Neisseria meningitidis

<400> 672
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 20 25 30
 Ala Lys Phe Ala Leu Gly Ser Gly Glu Leu Val Phe Trp Arg Met Leu
 35 40 45
 Phe Ser Thr Val Ala Leu Gly Ala Ala Ala Val Leu Arg Arg Asp Thr
 50 55 60
 Phe Arg Thr Pro His Trp Lys Asn His Leu Asn Arg Ser Met Val Gly
 65 70 75 80
 Thr Gly Ala Met Leu Leu Leu Phe Tyr Ala Val Thr His Leu Pro Leu
 85 90 95
 Ala Thr Gly Val Thr Leu Ser Tyr Thr Ser Ser Ile Phe Leu Ala Val
 100 105 110
 Phe Ser Phe Leu Ile Leu Lys Glu Arg Ile Ser Val Tyr Thr Gln Ala
 115 120 125
 Val Leu Leu Leu Gly Phe Ala Gly Val Val Leu Leu Leu Asn Pro Ser
 130 135 140
 Phe Arg Ser Gly Gln Glu Thr Ala Ala Leu Ala Gly Leu Ala Gly Gly
 145 150 155 160
 Ala Met Ser Gly Trp Ala Tyr Leu Lys Val Arg Glu Leu Ser Leu Ala
 165 170 175
 Gly Glu Pro Gly Trp Arg Val Val Phe Tyr Leu Ser Val Thr Gly Val
 180 185 190
 Ala Met Ser Ser Val Trp Ala Thr Leu Thr Gly Trp His Thr Leu Ser
 195 200 205
 Phe Pro Ser Ala Val Tyr Leu Ser Cys Ile Gly Val Ser Ala Leu Ile
 210 215 220
 Ala Gln Leu Ser Met Thr Arg Ala Tyr Lys Val Gly Asp Lys Phe Thr
 225 230 235 240
 Val Ala Ser Leu Ser Tyr Met Thr Val Val Phe Ser Ala Leu Ser Ala
 245 250 255

Ala Phe Phe Leu Ala Glu Glu Leu Phe Trp Gln Glu Ile Leu Gly Met
 260 265 270

Cys Ile Ile Ile Leu Ser Gly Ile Leu Ser Ser Ile Arg Pro Thr Ala
 275 280 285

Phe Lys Gln Arg Leu Gln Ser Leu Phe Arg Gln Arg
 290 295 300

<210> 673
 <211> 1983
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 673
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 ccgcatcagg tgcagatgtg gctcgaccgg gcaaaaagaag tcattttttac cgagttcagc 120
 tggttttatg ttttaacgtt ttccattttt ctgggttttc tgctgatact ctcggtcagc 180
 ggtttgggaa acatcaggct aggacgggat gaagatgtgc cggaattcgg cttcctgtcg 240
 tggctggcga tgctgtttgc ggccgggatg ggcgtgggcc tgatgttttt cggcgtggca 300
 gagcgttga tgcatattt ttccgacatt acggtcggcg cgccggaaca caggcagcag 360
 caggcattgc tgcacacggg gtccatttgg ggcgttcacg cctgggtcgg gtacggtacg 420
 attgcattgg ctttggctta ttccggtttc cgctacaaac tgccgcttgc cctgcgttct 480
 tgtttttacc ccctgttgaa agaaaaaatt tccggaagg tccggcgatgc cattgatatt 540
 atggcggtgc ttgctacttt ttccggcatc atcaccacat tgggggttcgg ggcttcgcaa 600
 ctgggcgcgc gattgcagga aatgggctgg attgcccgaac acagcttcgg cgtgcaggtc 660
 ttgattatcg ccgcgcgtat gtccctcgcc gtcgtttcgg caatatccgg cgtggggaag 720
 ggcgtgaagg tgttgagcga gttgaacctg ggccttgctg ttttgctgct gttttttgtt 780
 ttggcggcgcg accccactgt ttacctgttg tccgcatcgc gcgacaacat agggaaactac 840
 ctccgaaatc tgggtgcgcct cagtttgaaa acttatgcgt acgaacggga acacaagccg 900
 tggtttgaat cttggacggg gctttatttg gcgtggtggg gttcttgggc gccgtttgtg 960
 ggtttgttta tcgcgcgcac ttcaaagggg cgcaccatcc gcgagtttgt cttcgggggt 1020
 ttgctcatcc ccggcctgtt cggcgttttg tggtttaccg tcttcggcaa tacggcgatt 1080
 tggctgaatg acggggttgc ggggggaatg ctcgaaaaga tgacctctc tccggaaacg 1140
 ctgcttttta aattctttta ttacctccc ctgcccgaac tgacgagcat cgtcagcctg 1200
 ctggtcattt ccctgttttt tgtaacttct gccgactccg ggatttatgt cctgaacaat 1260
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 ctgatgtctg ccgttgccgt tttgctgatg cgctcggggc gactcggcaa cctgcagtct 1380
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 tggaaaggct tgagtgcgga taagaaatat tttgagacct gggtaaccc taccagtgtg 1500
 ttttggacgg gcggcaagt gaaagaacgg ctggtgcgga taatgagcca gacgcaggag 1560
 caggatattt taaaattcct caaacatacc gcatcgccc ctatgcacga gttgcaacgg 1620
 gagctttcgg aagaatacgg cttgagcgtc cgggtcgata agatgtttca tcaggacgag 1680
 ccgcaatcg agttcgatc tccgaaagag acgatgcgcg attttatgta cgggattaag 1740
 tctgtcgggc aggatgtatc cgaccagttg attaacgacg gcaagctgcc gcatatccgg 1800
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 cagtatatga acaaggacga gctgattgcc gacattttga aaaactacga acgttatattg 1920
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<210> 674
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 <212> PRT
 <213> Neisseria gonorrhoeae

<400> 674

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Arg	Ile	Met	Ser	Gln	Thr	Gln	Glu	Gln	Asp	Ile	Leu	Lys	Phe	Leu	Lys
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Pro	Ala	Ile	Glu	Phe	Val	Ile	Arg	Lys	Glu	Thr	Met	Arg	Asp	Phe	Met
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Asp	Gly	Lys	Leu	Pro	His	Ile	Arg	His	Gln	Thr	Thr	Tyr	Lys	Pro	Tyr

595

600

605

Ala Tyr Phe Phe Asp Gly Arg Val Gly Tyr Asp Val Gln Tyr Met Asn
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Lys Asp Glu Leu Ile Ala Asp Ile Leu Lys Asn Tyr Glu Arg Tyr Leu
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<211> 1983

<212> DNA

<213> Neisseria meningitidis

<400> 675

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taa 1983

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50 55 60
Ile Arg Leu Gly Arg Asp Glu Asp Val Pro Glu Phe Gly Phe Leu Ser
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Trp Leu Ala Met Leu Phe Ala Ala Gly Met Gly Val Gly Leu Met Phe
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Phe Gly Val Ala Glu Pro Leu Met His Tyr Phe Ser Asp Ile Thr Ala
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Gly Thr Pro Glu His Arg Gln Gln Gln Ala Leu Leu His Thr Val Phe
115 120 125
His Trp Gly Val His Ala Trp Ser Val Tyr Gly Thr Ile Ala Leu Ala
130 135 140
Leu Ala Tyr Phe Gly Phe Arg Tyr Lys Leu Pro Leu Ala Leu Arg Ser
145 150 155 160
Cys Phe Tyr Pro Leu Leu Lys Glu Lys Ile Ser Gly Arg Phe Gly Asp
165 170 175
Ala Ile Asp Ile Met Ala Leu Leu Ala Thr Phe Phe Gly Ile Ile Thr
180 185 190
Thr Leu Gly Phe Gly Ala Ser Gln Leu Gly Ala Gly Leu Gln Glu Met
195 200 205
Gly Trp Ile Ala Glu Asn Ser Phe Ser Val Gln Val Leu Ile Ile Ala
210 215 220
Ala Val Met Ser Leu Ala Val Val Ser Ala Ile Ser Gly Val Gly Lys
225 230 235 240
Gly Val Lys Val Leu Ser Glu Leu Asn Leu Gly Leu Ala Phe Leu Leu
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260 265 270

Phe Gly Asp Asn Ile Gly Asn Tyr Leu Gly Asn Leu Val Arg Leu Ser
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Phe Lys Thr Tyr Ala Tyr Glu Arg Glu His Lys Pro Trp Phe Glu Ser
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Trp Thr Val Leu Tyr Trp Ala Trp Trp Cys Ser Trp Ala Pro Phe Val
305 310 315 320

Gly Leu Phe Ile Ala Arg Ile Ser Lys Gly Arg Thr Ile Arg Glu Phe
325 330 335

Val Phe Gly Val Leu Leu Ile Pro Gly Leu Phe Gly Val Leu Trp Phe
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Thr Val Phe Gly Asn Thr Ala Ile Trp Leu Asn Asp Gly Val Ala Gly
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370 375 380

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Val Ser Leu Pro Phe Ala Leu Leu Met Leu Ile Met Cys Phe Ser Leu
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Gln Thr Ala Ser Pro Ala Met His Glu Leu Gln Arg Glu Leu Ser Glu
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Pro Ala Ile Glu Phe Val Ile Arg Lys Glu Thr Met Arg Asp Phe Met
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Asp Gly Lys Leu Pro His Ile Arg His Gln Thr Thr Tyr Lys Pro Tyr
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Ala Tyr Phe Phe Asp Gly Arg Val Gly Tyr Asp Val Gln Tyr Met Asn
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Lys Asp Glu Leu Ile Ala Asp Ile Leu Lys Asn Tyr Glu Arg Tyr Leu
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 35 40 45
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 Ile Arg Leu Gly Arg Asp Glu Asp Val Pro Glu Phe Gly Phe Leu Ser
 65 70 75 80
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 Phe Gly Val Ala Glu Pro Leu Met His Tyr Phe Ser Asp Ile Thr Ala
 100 105 110
 Gly Thr Pro Glu His Arg Gln Gln Gln Ala Leu Leu His Thr Val Phe
 115 120 125
 His Trp Gly Val His Ala Trp Ser Val Tyr Gly Thr Ile Ala Leu Ala
 130 135 140
 Leu Ala Tyr Phe Gly Phe Arg Tyr Lys Leu Pro Leu Ala Leu Arg Ser
 145 150 155 160
 Cys Phe Tyr Pro Leu Leu Lys Glu Lys Ile Ser Gly Arg Phe Gly Asp
 165 170 175
 Ala Ile Asp Ile Met Ala Leu Leu Ala Thr Phe Phe Gly Ile Ile Thr
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 195 200 205
 Gly Trp Ile Ala Glu Asn Ser Phe Ser Val Gln Val Leu Ile Ile Ala
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 Ala Val Met Ser Leu Ala Val Val Ser Ala Ile Ser Gly Val Gly Lys
 225 230 235 240
 Gly Val Lys Val Leu Ser Glu Leu Asn Leu Gly Leu Ala Phe Leu Leu
 245 250 255

Leu	Phe	Phe	Val	Leu	Ala	Ala	Gly	Pro	Thr	Val	Tyr	Leu	Leu	Ser	Ala	260	265	270
Phe	Gly	Asp	Asn	Ile	Gly	Asn	Tyr	Leu	Gly	Asn	Leu	Val	Arg	Leu	Ser	275	280	285
Phe	Lys	Thr	Tyr	Ala	Tyr	Glu	Arg	Glu	His	Lys	Pro	Trp	Phe	Glu	Ser	290	295	300
Trp	Thr	Val	Leu	Tyr	Trp	Ala	Trp	Trp	Cys	Ser	Trp	Ala	Pro	Phe	Val	305	310	315
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Phe	Phe	Asn	Tyr	Leu	Pro	Leu	Pro	Glu	Leu	Thr	Ser	Ile	Val	Ser	Leu	385	390	395
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Val	Ser	Leu	Pro	Phe	Ala	Leu	Leu	Met	Leu	Ile	Met	Cys	Phe	Ser	Leu	465	470	475
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Pro	Thr	Ser	Val	Phe	Trp	Thr	Gly	Gly	Lys	Trp	Lys	Glu	Arg	Leu	Val	500	505	510
Gln	Ile	Met	Ser	Gln	Thr	Gln	Glu	Gln	Asp	Ile	Leu	Lys	Phe	Leu	Lys	515	520	525
His	Thr	Ala	Ser	Pro	Ala	Met	His	Glu	Leu	Gln	Arg	Glu	Leu	Ser	Glu	530	535	540
Glu	Tyr	Gly	Leu	Ser	Val	Arg	Val	Asp	Lys	Met	Phe	His	Gln	Asp	Glu	545	550	555

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Asp Gly Lys Leu Pro His Ile Arg His Gln Thr Thr Tyr Lys Pro Tyr
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Ala Tyr Phe Phe Asp Gly Arg Val Gly Tyr Asp Val Gln Tyr Met Asn
610 615 620

Lys Asp Glu Leu Ile Ala Asp Ile Leu Lys Asn Tyr Glu Arg Tyr Leu
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Glu Leu Ala Glu
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ctgatcgtca gggcggttc ggtgatgcgg ggctacctca atatgcctgc cgccaccgat 900
gaaaccatcg tcaacggctg gttgaaaacg ggcgatttcg ttaccataga cgaggacggc 960
tttatcttta tcgtcgaccg caaaaaagat ttgattatth ccaaaggcca aaacgtctat 1020
ccgcgcgaga tcgaagaaga aatccacaaa ctcgatgccg tcgaagccgc cgccgtcatc 1080
ggcgtgaaag accgttatgc cgacgaggaa atcgtcgcct tcgtccaatt gaaggaaggt 1140
atggatttgg gcgaggacga aatccgcgcg cacctgcgta ccgtgctggc aaatttcaaa 1200
atccccaaac agatccactt taaagacggg ctgcgcgca acgctacggg caaagtattg 1260
aaacgggtgc tgaaggagca gtttgaagga aacaaatga 1299

<210> 680
<211> 432
<212> PRT
<213> Neisseria gonorrhoeae

<400> 680

Met	Asn	Thr	Phe	Leu	Lys	Asn	Ser	Glu	Tyr	Ala	Tyr	Ile	Leu	Asn	Asp
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			20					25					30		
Ala	Gly	Leu	Lys	Ala	Gln	Thr	Pro	Val	Glu	Lys	Ile	Ile	Trp	Thr	Asp
		35					40					45			
Lys	Ser	Arg	Pro	Ala	Gly	Glu	Thr	Ala	Glu	Gly	Asp	Ala	Phe	Phe	Glu
	50						55					60			
Asn	Val	Arg	Arg	Phe	Pro	Glu	Lys	Pro	Asp	Leu	Gly	Arg	Gln	Pro	Arg
65					70					75					80
Ile	Asn	Asp	Leu	Ala	His	Ile	Ile	Tyr	Thr	Ser	Gly	Thr	Thr	Gly	His
				85					90					95	
Pro	Lys	Gly	Ala	Leu	Ile	Ser	Tyr	Ala	Asn	Leu	Phe	Ala	Asn	Leu	Asn
			100					105					110		
Gly	Ile	Glu	Arg	Ile	Phe	Lys	Ile	Ser	Lys	Arg	Asp	Arg	Phe	Ile	Val
		115					120					125			
Phe	Leu	Pro	Met	Phe	His	Ser	Phe	Thr	Leu	Thr	Ala	Met	Val	Leu	Leu
	130					135					140				
Pro	Ile	Tyr	Met	Ala	Cys	Ser	Ile	Ile	Leu	Val	Lys	Ser	Val	Phe	Pro
145					150					155					160
Phe	Ser	Asn	Val	Leu	Lys	Gln	Ala	Leu	Leu	Lys	Arg	Ala	Thr	Val	Phe
			165						170					175	
Leu	Gly	Val	Pro	Ala	Ile	Tyr	Thr	Ala	Met	Ser	Lys	Ala	Lys	Ile	Pro
			180					185					190		
Trp	Tyr	Phe	Arg	Trp	Phe	Asn	Arg	Ile	Arg	Leu	Phe	Ile	Ser	Gly	Gly
		195					200					205			
Ala	Pro	Leu	Ala	Glu	Gln	Thr	Ile	Leu	Asp	Phe	Lys	Ala	Lys	Phe	Pro
	210					215					220				
Arg	Ala	Lys	Leu	Leu	Glu	Gly	Tyr	Gly	Leu	Ser	Glu	Ala	Ser	Pro	Val
225					230					235					240
Val	Ala	Val	Asn	Thr	Pro	Glu	Arg	Gln	Lys	Ala	Arg	Ser	Val	Gly	Ile
			245						250					255	
Pro	Leu	Pro	Gly	Leu	Glu	Ala	Lys	Ala	Val	Asp	Glu	Glu	Leu	Val	Glu
			260					265					270		
Val	Pro	Arg	Gly	Glu	Val	Gly	Glu	Leu	Ile	Val	Arg	Gly	Gly	Ser	Val
		275					280					285			

Met Arg Gly Tyr Leu Asn Met Pro Ala Ala Thr Asp Glu Thr Ile Val
290 295 300

Asn Gly Trp Leu Lys Thr Gly Asp Phe Val Thr Ile Asp Glu Asp Gly
305 310 315 320

Phe Ile Phe Ile Val Asp Arg Lys Lys Asp Leu Ile Ile Ser Lys Gly
325 330 335

Gln Asn Val Tyr Pro Arg Glu Ile Glu Glu Glu Ile His Lys Leu Asp
340 345 350

Ala Val Glu Ala Ala Ala Val Ile Gly Val Lys Asp Arg Tyr Ala Asp
355 360 365

Glu Glu Ile Val Ala Phe Val Gln Leu Lys Glu Gly Met Asp Leu Gly
370 375 380

Glu Asp Glu Ile Arg Arg His Leu Arg Thr Val Leu Ala Asn Phe Lys
385 390 395 400

Ile Pro Lys Gln Ile His Phe Lys Asp Gly Leu Pro Arg Asn Ala Thr
405 410 415

Gly Lys Val Leu Lys Arg Val Leu Lys Glu Gln Phe Glu Gly Asn Lys
420 425 430

<210> 681
<211> 1554
<212> DNA
<213> Neisseria meningitidis

<400> 681
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aacggcacgg cagtgttcga cggcaaggaa aaaaccgcct accgcgcgct caagcaggag 120
gccgaagccg tcgcggcgta tctgcaaaat atcggcggtga agttcggcga cacggtcgcg 180
ctggcggttt ccaattccac agaattttatt accgcctatt tcgccatctc cgccatcggc 240
gcggtcgccg taccgatgaa cacattttttg aaaaacagcg aatacgcgta tatcctgaac 300
gactgcaagg cgcgcttcct gttcgcctcg gccggcctgt caaaagaatt ggcgggcttg 360
aaggcgcaaa cgcccgtcga aaaaatcatt tggacggaca aaagccgtcc gaccggcgaa 420
acggcggaag gcgatgcctt ttttgaagac gtgcgccgct tccccgaaaa acccgacttg 480
ggccgcgaac cccggataaa tgatttggca cacatcatct acacctccgg cacgacgggg 540
catcccaaaag gcgcgcta at cagttacgcc aacctgttcg ccaacctgaa cggcatcgaa 600
cgcatcttta aaatttccaa gcgcgaccgc tttatcgttt tcttgccgat gttccacagc 660
ttcacgctga cggtatagg gctgctgccg atttatatgg cgtgttcgat tattttggtc 720
aaatccgttt ttccgttttc caacgttttg aaacagacac tgctcaaacg cgcgaccgtg 780
tttttgggcg taccgcgat ttacaccgcg atgagcaagg cgaaaatccc ttggtatttc 840
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atcctcgatt tcaaagccaa gtccccccgc gccaaattgc tggaaggcta cggactgagc 960
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ggcgaagtgg gcgaactgat cgtcaggggc gggtcggtga tgcggggcta cctcaatatg 1140
cctgccgcca ccgatgaaac catcgtcaac ggctggttga aaacgggcga tttcgttacc 1200

atagacgaag acggctttat ctttatcgtc gaccgcaaaa aagatttgat tatttcctaaa 1260
 ggtcaaaatg tctatccgcg cgagattgaa gaagaaatct acaaactcga tgccgctcgaa 1320
 gccgccgccc tcatcgccgt gaaagaccgt tatgccgacg aggaaatcgt cgccttcgtc 1380
 caattgaagg aaggtatgga tttgggacgag aacgaaatcc gccgccacct gcgtaccgtg 1440
 ctggcaaatt tcaaaatccc caacaaatc cactttaaag acgggctgcc gcgcaacgct 1500
 acgggcaagg tattgaaacg ggtgttgaag gagcagtttg acggaaacaa atga 1554

<210> 682

<211> 517

<212> PRT

<213> *Neisseria meningitidis*

<400> 682

Met Asn Arg Thr Tyr Ala Asn Phe Tyr Glu Met Leu Ala Ala Ala Cys
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Arg Lys Asn Gly Asn Gly Thr Ala Val Phe Asp Gly Lys Glu Lys Thr
 20 25 30

Ala Tyr Arg Ala Leu Lys Gln Glu Ala Glu Ala Val Ala Ala Tyr Leu
 35 40 45

Gln Asn Ile Gly Val Lys Phe Gly Asp Thr Val Ala Leu Ala Val Ser
 50 55 60

Asn Ser Thr Glu Phe Ile Thr Ala Tyr Phe Ala Ile Ser Ala Ile Gly
 65 70 75 80

Ala Val Ala Val Pro Met Asn Thr Phe Leu Lys Asn Ser Glu Tyr Ala
 85 90 95

Tyr Ile Leu Asn Asp Cys Lys Ala Arg Phe Leu Phe Ala Ser Ala Gly
 100 105 110

Leu Ser Lys Glu Leu Ala Gly Leu Lys Ala Gln Thr Pro Val Glu Lys
 115 120 125

Ile Ile Trp Thr Asp Lys Ser Arg Pro Thr Gly Glu Thr Ala Glu Gly
 130 135 140

Asp Ala Phe Phe Glu Asp Val Arg Arg Phe Pro Glu Lys Pro Asp Leu
 145 150 155 160

Gly Arg Gln Pro Arg Ile Asn Asp Leu Ala His Ile Ile Tyr Thr Ser
 165 170 175

Gly Thr Thr Gly His Pro Lys Gly Ala Leu Ile Ser Tyr Ala Asn Leu
 180 185 190

Phe Ala Asn Leu Asn Gly Ile Glu Arg Ile Phe Lys Ile Ser Lys Arg
 195 200 205

Asp Arg Phe Ile Val Phe Leu Pro Met Phe His Ser Phe Thr Leu Thr
 210 215 220

Ala Met Val Leu Leu Pro Ile Tyr Met Ala Cys Ser Ile Ile Leu Val
 225 230 235 240
 Lys Ser Val Phe Pro Phe Ser Asn Val Leu Lys Gln Thr Leu Leu Lys
 245 250 255
 Arg Ala Thr Val Phe Leu Gly Val Pro Ala Ile Tyr Thr Ala Met Ser
 260 265 270
 Lys Ala Lys Ile Pro Trp Tyr Phe Arg Trp Phe Asn Arg Ile Arg Leu
 275 280 285
 Phe Ile Ser Gly Gly Ala Pro Leu Ala Glu Gln Thr Ile Leu Asp Phe
 290 295 300
 Lys Ala Lys Phe Pro Arg Ala Lys Leu Leu Glu Gly Tyr Gly Leu Ser
 305 310 315 320
 Glu Ala Ser Pro Val Val Ala Val Asn Thr Pro Glu Arg Gln Lys Ala
 325 330 335
 Arg Ser Val Gly Ile Pro Leu Pro Gly Leu Glu Ala Lys Ala Val Asp
 340 345 350
 Glu Glu Leu Val Glu Val Pro Arg Gly Glu Val Gly Glu Leu Ile Val
 355 360 365
 Arg Gly Gly Ser Val Met Arg Gly Tyr Leu Asn Met Pro Ala Ala Thr
 370 375 380
 Asp Glu Thr Ile Val Asn Gly Trp Leu Lys Thr Gly Asp Phe Val Thr
 385 390 395 400
 Ile Asp Glu Asp Gly Phe Ile Phe Ile Val Asp Arg Lys Lys Asp Leu
 405 410 415
 Ile Ile Ser Lys Gly Gln Asn Val Tyr Pro Arg Glu Ile Glu Glu Glu
 420 425 430
 Ile Tyr Lys Leu Asp Ala Val Glu Ala Ala Ala Val Ile Gly Val Lys
 435 440 445
 Asp Arg Tyr Ala Asp Glu Glu Ile Val Ala Phe Val Gln Leu Lys Glu
 450 455 460
 Gly Met Asp Leu Gly Glu Asn Glu Ile Arg Arg His Leu Arg Thr Val
 465 470 475 480
 Leu Ala Asn Phe Lys Ile Pro Lys Gln Ile His Phe Lys Asp Gly Leu
 485 490 495
 Pro Arg Asn Ala Thr Gly Lys Val Leu Lys Arg Val Leu Lys Glu Gln
 500 505 510
 Phe Asp Gly Asn Lys
 515

<210> 683
 <211> 1554
 <212> DNA
 <213> Neisseria meningitidis

<400> 683
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 gccgaagccg ttgcggcgta tctgcaaaat atcggcgtga agttcggcga caccggtcgcg 180
 ctggcggttt ccaattccac ggaattttatt accgcctatt tcgccgtatc cgccatcggc 240
 gcggttgccg taccgatgaa cacatttttg aaaaacagcg aatacgcgta tatcctgaac 300
 gactgcaagg cgcgcttcct gttcgcctcg gccggcctgt caaaagaatt ggcgggcttg 360
 aaggcgcaaa cgcccgtcga aaaaatcatt tggacgggcc aaagccgtcc ggacggcgaa 420
 atggcggaag gcgatgcctt ttttgaagac gtgcgcgcgt tcccgaataa acccgacttg 480
 ggccgccaac cccggataaa tgatttggca cacatcatct acacctccgg caccgacggg 540
 catcccaaag gtgcgcta atcagctacgcc aacctgttcg ccaacctgaa cggcatcgaa 600
 cgcattctta aaatctccaa gcgcgaccgc tttatcgttt tcctgccgat gttccacagc 660
 ttcacgctga cggctatggg gctgctgccg atttatatgg cgtgttcgat tattttgggtc 720
 aaatccgttt tccccctttc caacgttttg aaacaggcac tgcctcaaacg cgcgaccgtg 780
 tttttgggcg tgcccgcgat ttacaccgcg atgagcaaga cgaaaatccc ttggtatttc 840
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 cctgccgcca ccgatgaaac catcgtcaac ggctggttga aaacgggcga tttcgttacc 1200
 atagacgaag acggctttat ctttatcgtc gaccgcaaaa aagatttgat tatttccaaa 1260
 ggtcaaaatg tctatccgcg cgaaatcgaa gaagaaatct acaaactcga tgcggtcgaa 1320
 gccgcgcgcg tcatcggcgt gaaagaccgt tatgccgacg aggaaatcgt cgccttcgtc 1380
 caattgaagg aagggtatga tttgggcgag aacgaaatcc gccgccacct gcgtaccgtg 1440
 ctggcaaat tcaaaatccc caaacaatc cactttaaag acgggctgcc gcgcaacgct 1500
 acgggcaagg tattgaaacg ggtgttgaag gagcagtttg acggaaacaa atga 1554

<210> 684
 <211> 517
 <212> PRT
 <213> Neisseria meningitidis

<400> 684
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 Arg Lys Asn Gly Asn Gly Thr Ala Val Phe Asp Gly Lys Glu Lys Thr
 20 25 30
 Ala Tyr Arg Ala Leu Lys Gln Glu Ala Glu Ala Val Ala Ala Tyr Leu
 35 40 45
 Gln Asn Ile Gly Val Lys Phe Gly Asp Thr Val Ala Leu Ala Val Ser
 50 55 60
 Asn Ser Thr Glu Phe Ile Thr Ala Tyr Phe Ala Val Ser Ala Ile Gly
 65 70 75 80
 Ala Val Ala Val Pro Met Asn Thr Phe Leu Lys Asn Ser Glu Tyr Ala

85					90					95					
Tyr	Ile	Leu	Asn	Asp	Cys	Lys	Ala	Arg	Phe	Leu	Phe	Ala	Ser	Ala	Gly
			100					105					110		
Leu	Ser	Lys	Glu	Leu	Ala	Gly	Leu	Lys	Ala	Gln	Thr	Pro	Val	Glu	Lys
		115					120					125			
Ile	Ile	Trp	Thr	Gly	Gln	Ser	Arg	Pro	Asp	Gly	Glu	Met	Ala	Glu	Gly
		130					135					140			
Asp	Ala	Phe	Phe	Glu	Asp	Val	Arg	Arg	Phe	Pro	Glu	Lys	Pro	Asp	Leu
145						150					155				160
Gly	Arg	Gln	Pro	Arg	Ile	Asn	Asp	Leu	Ala	His	Ile	Ile	Tyr	Thr	Ser
				165					170					175	
Gly	Thr	Thr	Gly	His	Pro	Lys	Gly	Ala	Leu	Ile	Ser	Tyr	Ala	Asn	Leu
			180					185						190	
Phe	Ala	Asn	Leu	Asn	Gly	Ile	Glu	Arg	Ile	Phe	Lys	Ile	Ser	Lys	Arg
		195					200					205			
Asp	Arg	Phe	Ile	Val	Phe	Leu	Pro	Met	Phe	His	Ser	Phe	Thr	Leu	Thr
		210				215					220				
Ala	Met	Val	Leu	Leu	Pro	Ile	Tyr	Met	Ala	Cys	Ser	Ile	Ile	Leu	Val
225						230					235				240
Lys	Ser	Val	Phe	Pro	Phe	Ser	Asn	Val	Leu	Lys	Gln	Ala	Leu	Leu	Lys
				245					250					255	
Arg	Ala	Thr	Val	Phe	Leu	Gly	Val	Pro	Ala	Ile	Tyr	Thr	Ala	Met	Ser
			260					265						270	
Lys	Thr	Lys	Ile	Pro	Trp	Tyr	Phe	Arg	Trp	Phe	Asn	Arg	Ile	Arg	Leu
		275					280					285			
Phe	Ile	Ser	Gly	Gly	Ala	Pro	Leu	Ala	Glu	Gln	Thr	Ile	Leu	Asp	Phe
		290				295					300				
Lys	Ala	Lys	Phe	Pro	Arg	Ala	Lys	Leu	Leu	Glu	Gly	Tyr	Gly	Leu	Ser
305						310					315				320
Glu	Ala	Ser	Pro	Val	Val	Ala	Val	Asn	Thr	Pro	Glu	Arg	Gln	Lys	Ala
				325					330					335	
Arg	Ser	Val	Gly	Ile	Pro	Leu	Pro	Gly	Leu	Glu	Val	Lys	Ala	Val	Asp
			340					345					350		
Glu	Glu	Leu	Val	Glu	Val	Pro	Arg	Gly	Glu	Val	Gly	Glu	Leu	Ile	Val
		355					360					365			
Arg	Gly	Gly	Ser	Val	Met	Arg	Gly	Tyr	Leu	Asn	Met	Pro	Ala	Ala	Thr
		370				375					380				
Asp	Glu	Thr	Ile	Val	Asn	Gly	Trp	Leu	Lys	Thr	Gly	Asp	Phe	Val	Thr

385		390		395		400
Ile Asp Glu Asp Gly Phe Ile Phe Ile Val Asp Arg Lys Lys Asp Leu						
	405			410		415
Ile Ile Ser Lys Gly Gln Asn Val Tyr Pro Arg Glu Ile Glu Glu Glu						
	420			425		430
Ile Tyr Lys Leu Asp Ala Val Glu Ala Ala Ala Val Ile Gly Val Lys						
	435			440		445
Asp Arg Tyr Ala Asp Glu Glu Ile Val Ala Phe Val Gln Leu Lys Glu						
	450			455		460
Gly Met Asp Leu Gly Glu Asn Glu Ile Arg Arg His Leu Arg Thr Val						
465		470		475		480
Leu Ala Asn Phe Lys Ile Pro Lys Gln Ile His Phe Lys Asp Gly Leu						
	485			490		495
Pro Arg Asn Ala Thr Gly Lys Val Leu Lys Arg Val Leu Lys Glu Gln						
	500			505		510
Phe Asp Gly Asn Lys						
	515					

<210> 685
 <211> 1092
 <212> DNA
 <213> *Neisseria gonorrhoeae*

<400> 685
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 gtggcggttg aatcgtaaaa cgcgtggaac aacgccggca cggggcattc cgcgctgtgc 180
 gaattgaact atgcgccgct ggggtgcggac ggcgtcatca atccggcgcg cgccctgaat 240
 attgccgaac agtttcatgt cagccgccag ttttgggcga cgctgggtcg ggaaggcaag 300
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 cactgccgtt acctgcaaaa acgctatgat gtgttttaaaa cgcagaaaact ttttgaaaat 420
 atggaatttt ccaccgatcg gaacaaaatt tccgattggg ctccgctgat tatgcgcggc 480
 cgggacgaaa accaaccctg cgccgccaac tattccgccc aaggcacgga tgtcgatttc 540
 ggacggctga cgcgccagat ggtgaaatat ttgcagggca agggcgtaaa aaccgagttc 600
 aaccgccacg tcgaagacat caaacgcgaa tccgacggcg cgtgggtgct caaaaccgcc 660
 gatacccgca acccagactg gcagctcacc ctccgcaccc gcttcctctt cctcggcgcg 720
 ggcggcggcg cactgaccct gctgcaaaaa tccggcatcc ccgaaggcaa aggctacggc 780
 ggcttacccg tgtccggcct gttcttccgc aacagcaacc ccgaaaccgc cgaacaacac 840
 aacgccaaaag tgtaagggca ggcttccgtc ggcgcgccgc cgatgtccgt cccgcacctc 900
 gacacacgca acgtagacgg caaacgacac cttatgttcg gtccttacgc aggtttccgt 960
 tccaacttcc tcaagcaagg ctcgtttatg gatttgccgc tgtccatcca tatggacaac 1020
 ctctatccta tgctgcgcgc cggctgggcg aatatgccgc tgaccaataa cctgctgggc 1080
 gaattgcgtt aa 1092

<210> 686
 <211> 363
 <212> PRT

<213> Neisseria gonorrhoeae

<400> 686

Met	Ala	Glu	Ala	Thr	Asp	Val	Val	Leu	Val	Gly	Gly	Gly	Ile	Met	Ser		
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Ala	Thr	Leu	Gly	Val	Leu	Leu	Lys	Glu	Leu	Glu	Pro	Ser	Trp	Glu	Ile		
			20					25					30				
Thr	Leu	Ile	Glu	Arg	Leu	Glu	Asp	Val	Ala	Leu	Glu	Ser	Ser	Asn	Ala		
		35					40					45					
Trp	Asn	Asn	Ala	Gly	Thr	Gly	His	Ser	Ala	Leu	Cys	Glu	Leu	Asn	Tyr		
	50					55					60						
Ala	Pro	Leu	Gly	Ala	Asp	Gly	Val	Ile	Asn	Pro	Ala	Arg	Ala	Leu	Asn		
65					70					75					80		
Ile	Ala	Glu	Gln	Phe	His	Val	Ser	Arg	Gln	Phe	Trp	Ala	Thr	Leu	Val		
				85					90					95			
Ala	Glu	Gly	Lys	Leu	Glu	Asp	Asn	Ser	Phe	Ile	Asn	Ala	Val	Pro	His		
			100					105					110				
Met	Ser	Leu	Val	Met	Asn	Glu	Asp	His	Cys	Arg	Tyr	Leu	Gln	Lys	Arg		
		115					120					125					
Tyr	Asp	Val	Phe	Lys	Thr	Gln	Lys	Leu	Phe	Glu	Asn	Met	Glu	Phe	Ser		
	130					135					140						
Thr	Asp	Arg	Asn	Lys	Ile	Ser	Asp	Trp	Ala	Pro	Leu	Ile	Met	Arg	Gly		
145				150						155					160		
Arg	Asp	Glu	Asn	Gln	Pro	Val	Ala	Ala	Asn	Tyr	Ser	Ala	Glu	Gly	Thr		
				165					170					175			
Asp	Val	Asp	Phe	Gly	Arg	Leu	Thr	Arg	Gln	Met	Val	Lys	Tyr	Leu	Gln		
		180						185					190				
Gly	Lys	Gly	Val	Lys	Thr	Glu	Phe	Asn	Arg	His	Val	Glu	Asp	Ile	Lys		
		195					200					205					
Arg	Glu	Ser	Asp	Gly	Ala	Trp	Val	Leu	Lys	Thr	Ala	Asp	Thr	Arg	Asn		
	210					215					220						
Pro	Asp	Trp	Gln	Leu	Thr	Leu	Arg	Thr	Arg	Phe	Leu	Phe	Leu	Gly	Ala		
225					230					235					240		
Gly	Gly	Gly	Ala	Leu	Thr	Leu	Leu	Gln	Lys	Ser	Gly	Ile	Pro	Glu	Gly		
			245						250					255			
Lys	Gly	Tyr	Gly	Gly	Leu	Pro	Val	Ser	Gly	Leu	Phe	Phe	Arg	Asn	Ser		
		260						265					270				
Asn	Pro	Glu	Thr	Ala	Glu	Gln	His	Asn	Ala	Lys	Val	Tyr	Gly	Gln	Ala		
		275					280					285					

Ser Val Gly Ala Pro Pro Met Ser Val Pro His Leu Asp Thr Arg Asn
 290 295 300

Val Asp Gly Lys Arg His Leu Met Phe Gly Pro Tyr Ala Gly Phe Arg
 305 310 315 320

Ser Asn Phe Leu Lys Gln Gly Ser Phe Met Asp Leu Pro Leu Ser Ile
 325 330 335

His Met Asp Asn Leu Tyr Pro Met Leu Arg Ala Gly Trp Ala Asn Met
 340 345 350

Pro Leu Thr Lys Tyr Leu Leu Gly Glu Leu Arg
 355 360

<210> 687
 <211> 1068
 <212> DNA
 <213> Neisseria meningitidis

<400> 687
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 gtggcggttg aatcgtaaaa cgcgtggaac aacgccggca cggggcattc cgcgctgtgc 180
 gaattgaact atgcgcggtt ggggtgcaaat gggattatcg atccggcgcg cgccctcaat 240
 attgccgaac agtttcatgt cagccgccag ttttgggcga cgctggtcgc ggaaggcaag 300
 ttggaagaca attccttcat caatgccgtg ccgcataatgt ctttgggtgat gaatgaagac 360
 cattgttctt atcttcaaaa acgttatgac gcgttttaaaa cccaaaaact ttttgaaaat 420
 atggaatttt ccaccgatcg gaacaaaatt tccgattggg ctccgctgat gatgcgcggc 480
 cgggacgaaa accaaccggt cgcgcgcaac tactccgccc aaggtaacga tgtcgatttc 540
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 aaccgccacg tcgaagacat caaacgcgaa tccgacggcg cgtgggtgct caaaaccgcc 660
 gatacccgca accccgacgg gcagctcacc ctccgtaccc gcttcctctt cctcggcgcg 720
 ggcggcgggc cgtgaccct gctgcaaaaa tccggcatcc ccgaaggcaa aggctacggc 780
 ggcttccccg tgtccggcct gttcttccgc aacagcaacc ccgaaaccgc cgaacaacac 840
 aacgccaag tgtacgggca ggcttccgtc ggcgcgcgcg cgatgtccgt cccgcacctc 900
 gacacacgca acgtggacgg caaacgccac cttatgttcg gcccttacgc aggcttccgt 960
 tccaacttcc tcaagcaagg ctgcgttatg gatttgccgc tgtccatcca tatggacaac 1020
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<210> 688
 <211> 356
 <212> PRT
 <213> Neisseria meningitidis

<400> 688
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 Ala Thr Leu Gly Val Leu Leu Lys Glu Leu Glu Pro Ser Trp Glu Ile
 20 25 30
 Thr Leu Ile Glu Arg Leu Glu Asp Val Ala Leu Glu Ser Ser Asn Ala
 35 40 45

Trp	Asn	Asn	Ala	Gly	Thr	Gly	His	Ser	Ala	Leu	Cys	Glu	Leu	Asn	Tyr	50	55	60	
Ala	Pro	Leu	Gly	Ala	Asn	Gly	Ile	Ile	Asp	Pro	Ala	Arg	Ala	Leu	Asn	65	70	75	80
Ile	Ala	Glu	Gln	Phe	His	Val	Ser	Arg	Gln	Phe	Trp	Ala	Thr	Leu	Val	85	90	95	
Ala	Glu	Gly	Lys	Leu	Glu	Asp	Asn	Ser	Phe	Ile	Asn	Ala	Val	Pro	His	100	105	110	
Met	Ser	Leu	Val	Met	Asn	Glu	Asp	His	Cys	Ser	Tyr	Leu	Gln	Lys	Arg	115	120	125	
Tyr	Asp	Ala	Phe	Lys	Thr	Gln	Lys	Leu	Phe	Glu	Asn	Met	Glu	Phe	Ser	130	135	140	
Thr	Asp	Arg	Asn	Lys	Ile	Ser	Asp	Trp	Ala	Pro	Leu	Met	Met	Arg	Gly	145	150	155	160
Arg	Asp	Glu	Asn	Gln	Pro	Val	Ala	Ala	Asn	Tyr	Ser	Ala	Glu	Gly	Thr	165	170	175	
Asp	Val	Asp	Phe	Gly	Arg	Leu	Thr	Arg	Gln	Met	Val	Lys	Tyr	Leu	Gln	180	185	190	
Gly	Lys	Gly	Val	Lys	Thr	Glu	Phe	Asn	Arg	His	Val	Glu	Asp	Ile	Lys	195	200	205	
Arg	Glu	Ser	Asp	Gly	Ala	Trp	Val	Leu	Lys	Thr	Ala	Asp	Thr	Arg	Asn	210	215	220	
Pro	Asp	Gly	Gln	Leu	Thr	Leu	Arg	Thr	Arg	Phe	Leu	Phe	Leu	Gly	Ala	225	230	235	240
Gly	Gly	Gly	Ala	Leu	Thr	Leu	Leu	Gln	Lys	Ser	Gly	Ile	Pro	Glu	Gly	245	250	255	
Lys	Gly	Tyr	Gly	Gly	Phe	Pro	Val	Ser	Gly	Leu	Phe	Phe	Arg	Asn	Ser	260	265	270	
Asn	Pro	Glu	Thr	Ala	Glu	Gln	His	Asn	Ala	Lys	Val	Tyr	Gly	Gln	Ala	275	280	285	
Ser	Val	Gly	Ala	Pro	Pro	Met	Ser	Val	Pro	His	Leu	Asp	Thr	Arg	Asn	290	295	300	
Val	Asp	Gly	Lys	Arg	His	Leu	Met	Phe	Gly	Pro	Tyr	Ala	Gly	Phe	Arg	305	310	315	320
Ser	Asn	Phe	Leu	Lys	Gln	Gly	Ser	Leu	Met	Asp	Leu	Pro	Leu	Ser	Ile	325	330	335	
His	Met	Asp	Asn	Leu	Tyr	Pro	Met	Leu	Cys	Ala	Gly	Trp	Ala	Asn	Met	340	345	350	

Pro Leu Thr Lys
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<210> 689
<211> 1467
<212> DNA
<213> *Neisseria meningitidis*

<400> 689
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attgccgaac agtttcatgt cagccgccag ttttgggcga cgttggtcgc ggaaggcaag 300
ttggaagaca attccttcat caatgccgtg ccgcataatgt ctttgggtgat gaatgaagac 360
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cgggacgaaa accaaccggt cgcgcgaac tactccgccc aaggcacgga tgcgatttc 540
ggacggctga cgcgcgaat ggtgaaatat ttgcagggca agggcgtaaa aaccgagttc 600
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gatacccgca accccgacgg gcagctcacc ctccgtaccc gcttcctctt cctcggcgcg 720
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gaattgcgta aaaccaaaga agaacgcttc gcctccctgc tggaatacta ccccgaggca 1140
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tataccgcga aagtgttga tatttaa 1467

<210> 690
<211> 488
<212> PRT
<213> *Neisseria meningitidis*

<400> 690
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Thr Leu Ile Glu Arg Leu Glu Asp Val Ala Leu Glu Ser Ser Asn Ala
35 40 45
Trp Asn Asn Ala Gly Thr Gly His Ser Ala Leu Cys Glu Leu Asn Tyr
50 55 60
Ala Pro Leu Gly Ala Asn Gly Ile Ile Asp Pro Ala Arg Ala Leu Asn
65 70 75 80

Ile	Ala	Glu	Gln	Phe	His	Val	Ser	Arg	Gln	Phe	Trp	Ala	Thr	Leu	Val	85	90	95
Ala	Glu	Gly	Lys	Leu	Glu	Asp	Asn	Ser	Phe	Ile	Asn	Ala	Val	Pro	His	100	105	110
Met	Ser	Leu	Val	Met	Asn	Glu	Asp	His	Cys	Ser	Tyr	Leu	Gln	Lys	Arg	115	120	125
Tyr	Asp	Ala	Phe	Lys	Thr	Gln	Lys	Leu	Phe	Glu	Asn	Met	Glu	Phe	Ser	130	135	140
Thr	Asp	Arg	Asn	Lys	Ile	Ser	Asp	Trp	Ala	Pro	Leu	Met	Met	Arg	Gly	145	150	155
Arg	Asp	Glu	Asn	Gln	Pro	Val	Ala	Ala	Asn	Tyr	Ser	Ala	Glu	Gly	Thr	165	170	175
Asp	Val	Asp	Phe	Gly	Arg	Leu	Thr	Arg	Gln	Met	Val	Lys	Tyr	Leu	Gln	180	185	190
Gly	Lys	Gly	Val	Lys	Thr	Glu	Phe	Asn	Arg	His	Val	Glu	Asp	Ile	Lys	195	200	205
Arg	Glu	Ser	Asp	Gly	Ala	Trp	Val	Leu	Lys	Thr	Ala	Asp	Thr	Arg	Asn	210	215	220
Pro	Asp	Gly	Gln	Leu	Thr	Leu	Arg	Thr	Arg	Phe	Leu	Phe	Leu	Gly	Ala	225	230	235
Gly	Gly	Gly	Ala	Leu	Thr	Leu	Leu	Gln	Lys	Ser	Gly	Ile	Pro	Glu	Gly	245	250	255
Lys	Gly	Tyr	Gly	Gly	Phe	Pro	Val	Ser	Gly	Leu	Phe	Phe	Arg	Asn	Ser	260	265	270
Asn	Pro	Glu	Thr	Ala	Glu	Gln	His	Asn	Ala	Lys	Val	Tyr	Gly	Gln	Ala	275	280	285
Ser	Val	Gly	Ala	Pro	Pro	Met	Ser	Val	Pro	His	Leu	Asp	Thr	Arg	Asn	290	295	300
Val	Asp	Gly	Lys	Arg	His	Leu	Met	Phe	Gly	Pro	Tyr	Ala	Gly	Phe	Arg	305	310	315
Ser	Asn	Phe	Leu	Lys	Gln	Gly	Ser	Leu	Met	Asp	Leu	Pro	Leu	Ser	Ile	325	330	335
His	Met	Asp	Asn	Leu	Tyr	Pro	Met	Leu	Arg	Ala	Gly	Trp	Ala	Asn	Met	340	345	350
Pro	Leu	Thr	Lys	Tyr	Leu	Leu	Gly	Glu	Leu	Arg	Lys	Thr	Lys	Glu	Glu	355	360	365
Arg	Phe	Ala	Ser	Leu	Leu	Glu	Tyr	Tyr	Pro	Glu	Ala	Asn	Pro	Asp	Asp			

370	375	380
Trp Glu Leu Ile Thr Ala Gly Gln Arg Val Gln Ile Ile Lys Lys Asp		
385	390	395 400
Ser Glu Lys Gly Gly Val Leu Gln Phe Gly Thr Glu Ile Val Ala His		
	405	410 415
Ala Asp Gly Ser Leu Ala Ala Leu Leu Gly Ala Ser Pro Gly Ala Ser		
	420	425 430
Thr Ala Val Pro Leu Met Ile Arg Leu Met His Gln Cys Phe Pro Glu		
	435	440 445
Arg Thr Pro Ser Trp Glu Gly Arg Leu Lys Glu Leu Val Pro Gly Tyr		
	450	455 460
Gly Ile Lys Leu Asn Glu Asn Pro Glu Arg Ala Asp Glu Ile Ile Ala		
	465	470 475 480
Tyr Thr Ala Lys Val Leu Asp Ile		
	485	

<210> 691
 <211> 1338
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 691

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attgccgaac	agtttcatgt	cagccgccag	ttttggggcg	cgctggtcgc	ggaaggcaag	300
ttggaagaca	attccttcat	caatgccgtg	ccgcataatg	ctttggtgat	gaacgaagac	360
cactgccgtt	acctgcaaaa	acgctatgat	gtgtttaaaa	cgcagaaaact	ttttgaaaaat	420
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cgggacgaaa	accaacccgt	cgccgccaac	tattccgccg	aaggcacgga	tgtcgatttc	540
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tccaacttcc	tcaagcaagg	ctcgtttatg	gatttgccgc	tgtccatcca	tatggacaac	1020
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gaattgcgta	aaaccaaaga	agaacgcttt	gcctccctgc	tggaatacta	cccgaaggcag	1140
accgcacgac	tgggtactcat	cacgcaggnc	acgcgtcata	tcattanata	tgactcgaaa	1200
ctgcgcgtgc	tgcagttgta	cgagattgtg	ccacgcgacg	ctcgcctcgc	cattctggag	1260
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<210> 692

<211> 445
<212> PRT
<213> Neisseria gonorrhoeae

<400> 692

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Ala	Thr	Leu	Gly	Val	Leu	Leu	Lys	Glu	Leu	Glu	Pro	Ser	Trp	Glu	Ile
		20						25					30		
Thr	Leu	Ile	Glu	Arg	Leu	Glu	Asp	Val	Ala	Leu	Glu	Ser	Ser	Asn	Ala
		35					40					45			
Trp	Asn	Asn	Ala	Gly	Thr	Gly	His	Ser	Ala	Leu	Cys	Glu	Leu	Asn	Tyr
	50					55					60				
Ala	Pro	Leu	Gly	Ala	Asp	Gly	Val	Ile	Asn	Pro	Ala	Arg	Ala	Leu	Asn
65					70					75					80
Ile	Ala	Glu	Gln	Phe	His	Val	Ser	Arg	Gln	Phe	Trp	Ala	Thr	Leu	Val
			85						90					95	
Ala	Glu	Gly	Lys	Leu	Glu	Asp	Asn	Ser	Phe	Ile	Asn	Ala	Val	Pro	His
			100					105					110		
Met	Ser	Leu	Val	Met	Asn	Glu	Asp	His	Cys	Arg	Tyr	Leu	Gln	Lys	Arg
		115					120					125			
Tyr	Asp	Val	Phe	Lys	Thr	Gln	Lys	Leu	Phe	Glu	Asn	Met	Glu	Phe	Ser
	130					135					140				
Thr	Asp	Arg	Asn	Lys	Ile	Ser	Asp	Trp	Ala	Pro	Leu	Ile	Met	Arg	Gly
145				150						155					160
Arg	Asp	Glu	Asn	Gln	Pro	Val	Ala	Ala	Asn	Tyr	Ser	Ala	Glu	Gly	Thr
			165						170					175	
Asp	Val	Asp	Phe	Gly	Arg	Leu	Thr	Arg	Gln	Met	Val	Lys	Tyr	Leu	Gln
		180						185					190		
Gly	Lys	Gly	Val	Lys	Thr	Glu	Phe	Asn	Arg	His	Val	Glu	Asp	Ile	Lys
		195					200					205			
Arg	Glu	Ser	Asp	Gly	Ala	Trp	Val	Leu	Lys	Thr	Ala	Asp	Thr	Arg	Asn
	210					215					220				
Pro	Asp	Trp	Gln	Leu	Thr	Leu	Arg	Thr	Arg	Phe	Leu	Phe	Leu	Gly	Ala
225					230					235					240
Gly	Gly	Gly	Ala	Leu	Thr	Leu	Leu	Gln	Lys	Ser	Gly	Ile	Pro	Glu	Gly
				245					250					255	
Lys	Gly	Tyr	Gly	Gly	Leu	Pro	Val	Ser	Gly	Leu	Phe	Phe	Arg	Asn	Ser
			260					265					270		

Asn Pro Glu Thr Ala Glu Gln His Asn Ala Lys Val Tyr Gly Gln Ala
 275 280 285
 Ser Val Gly Ala Pro Pro Met Ser Val Pro His Leu Asp Thr Arg Asn
 290 295 300
 Val Asp Gly Lys Arg His Leu Met Phe Gly Pro Tyr Ala Gly Phe Arg
 305 310 315 320
 Ser Asn Phe Leu Lys Gln Gly Ser Phe Met Asp Leu Pro Leu Ser Ile
 325 330 335
 His Met Asp Asn Leu Tyr Pro Met Leu Arg Ala Gly Trp Ala Asn Met
 340 345 350
 Pro Leu Thr Lys Tyr Leu Leu Gly Glu Leu Arg Lys Thr Lys Glu Glu
 355 360 365
 Arg Phe Ala Ser Leu Leu Glu Tyr Tyr Pro Arg Gln Thr Arg Arg Leu
 370 375 380
 Val Leu Ile Thr Gln Xaa Thr Arg His Ile Ile Xaa Tyr Asp Ser Lys
 385 390 395 400
 Leu Arg Val Leu Gln Leu Tyr Glu Ile Val Pro Arg Asp Ala Arg Ser
 405 410 415
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 420 425 430
 Asp Asp Thr Ala Pro Ser Ala Pro Val Leu Glu Ser Val
 435 440 445

<210> 693
 <211> 1467
 <212> DNA
 <213> Neisseria meningitidis

<400> 693
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 attgccgaac agtttcatgt cagccgccag ttttgggcga cgctggtcgc ggaaggcaag 300
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 cattgttctt atcttcaaaa acgttatgac gcgttttaaaa cccaaaaact ttttgaaaat 420
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 aacgccaaag tgtacgggca ggcttccgct ggcgcgccgc cgatgtccgt cccgcacctc 900
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 tccaacttcc tcaagcaagg ctcgcttatg gatttgcgcg tgtccatcca tatggacaac 1020

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aaccgccgacg actgggaact catcaccgca gggcaacgcg tccaaatcat taaaaaagac 1200
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<210> 694

<211> 488

<212> PRT

<213> Neisseria meningitidis

<400> 694

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Met Ala Glu Ala Thr Asp Val Val Leu Val Gly Gly Gly Ile Met Ser
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Ala Thr Leu Gly Val Leu Leu Lys Glu Leu Glu Pro Ser Trp Glu Ile
      20                      25                      30

Thr Leu Ile Glu Arg Leu Glu Asp Val Ala Leu Glu Ser Ser Asn Ala
      35                      40                      45

Trp Asn Asn Ala Gly Thr Gly His Ser Ala Leu Cys Glu Leu Asn Tyr
      50                      55                      60

Ala Pro Leu Gly Ala Asn Gly Ile Ile Asp Pro Ala Arg Ala Leu Asn
      65                      70                      75                      80

Ile Ala Glu Gln Phe His Val Ser Arg Gln Phe Trp Ala Thr Leu Val
      85                      90                      95

Ala Glu Gly Lys Leu Glu Asp Asn Ser Phe Ile Asn Ala Val Pro His
      100                      105                      110

Met Ser Leu Val Met Asn Glu Asp His Cys Ser Tyr Leu Gln Lys Arg
      115                      120                      125

Tyr Asp Ala Phe Lys Thr Gln Lys Leu Phe Glu Asn Met Glu Phe Ser
      130                      135                      140

Thr Asp Arg Asn Lys Ile Ser Asp Trp Ala Pro Leu Met Met Arg Gly
      145                      150                      155                      160

Arg Asp Glu Asn Gln Pro Val Ala Ala Asn Tyr Ser Ala Glu Gly Thr
      165                      170                      175

Asp Val Asp Phe Gly Arg Leu Thr Arg Gln Met Val Lys Tyr Leu Gln
      180                      185                      190

Gly Lys Gly Val Lys Thr Glu Phe Asn Arg His Val Glu Asp Ile Lys
      195                      200                      205

Arg Glu Ser Asp Gly Ala Trp Val Leu Lys Thr Ala Asp Thr Arg Asn
      210                      215                      220

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Pro Asp Gly Gln Leu Thr Leu Arg Thr Arg Phe Leu Phe Leu Gly Ala
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 Gly Gly Gly Ala Leu Thr Leu Leu Gln Lys Ser Gly Ile Pro Glu Gly
 245 250 255
 Lys Gly Tyr Gly Gly Phe Pro Val Ser Gly Leu Phe Phe Arg Asn Ser
 260 265 270
 Asn Pro Glu Thr Ala Glu Gln His Asn Ala Lys Val Tyr Gly Gln Ala
 275 280 285
 Ser Val Gly Ala Pro Pro Met Ser Val Pro His Leu Asp Thr Arg Asn
 290 295 300
 Val Asp Gly Lys Arg His Leu Met Phe Gly Pro Tyr Ala Gly Phe Arg
 305 310 315 320
 Ser Asn Phe Leu Lys Gln Gly Ser Leu Met Asp Leu Pro Leu Ser Ile
 325 330 335
 His Met Asp Asn Leu Tyr Pro Met Leu Cys Ala Gly Trp Ala Asn Met
 340 345 350
 Pro Leu Thr Lys Tyr Leu Leu Gly Glu Leu Arg Lys Thr Lys Glu Glu
 355 360 365
 Arg Phe Ala Ser Leu Leu Glu Tyr Tyr Pro Glu Ala Asn Pro Asp Asp
 370 375 380
 Trp Glu Leu Ile Thr Ala Gly Gln Arg Val Gln Ile Ile Lys Lys Asp
 385 390 395 400
 Ser Glu Lys Gly Gly Val Leu Gln Phe Gly Thr Glu Ile Val Ala His
 405 410 415
 Ala Asp Gly Ser Leu Ala Ala Leu Leu Gly Ala Ser Pro Gly Ala Ser
 420 425 430
 Thr Ala Val Pro Leu Met Ile Arg Leu Met His Gln Cys Phe Pro Glu
 435 440 445
 Arg Ala Pro Ser Trp Glu Asp Arg Leu Lys Glu Leu Val Pro Gly Tyr
 450 455 460
 Gly Ile Lys Leu Asn Glu Asn Pro Glu Arg Ala Asp Glu Ile Ile Ala
 465 470 475 480
 Tyr Thr Ala Lys Val Leu Asp Ile
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<210> 695
 <211> 1467
 <212> DNA
 <213> Neisseria meningitidis

<400> 695

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attgccgaac agtttcatgt cagccgccag ttttgggcga cgttggtcgc ggaaggcaag 300
ttggaagaca attccttcat caatgccgtg ccgcatatgt ctttggtgat gaatgaagac 360
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gacacacgca acgtggacgg caaacgccac cttatgttcg gcccttacgc aggtctccgt 960
tccaacttcc tcaagcaagg ctcaattatg gatttgccgc tgtccatcca tatggacaac 1020
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gaattgcgta aaaccaaaga agaacgcttc gcctccctgc tggaatacta ccccgaggca 1140
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tccgaaaaag gcggcgtgtt gcagtttggg acggagattg tcgcacacgc cgacggctcg 1260
ctcgcgcgat tgctgggcgc gtcgcggggc gcacgcaccg ccgtgccgct gatgatccgg 1320
ctgatgcacc aatgcttccc cgaacgcacc ccgtcttggg aaggccgtct gaaagagctg 1380
gtaccgggtt acggcatcaa gttgaacgaa aaccccgaaa gggcggatga aattatcgcc 1440
tataccgca aagtgttga tatttaa 1467
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<210> 696

<211> 488

<212> PRT

<213> *Neisseria meningitidis*

<400> 696

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Met Ala Glu Ala Thr Asp Val Val Leu Val Gly Gly Gly Ile Met Ser
  1                      5                      10                      15

Ala Thr Leu Gly Val Leu Leu Lys Glu Leu Glu Pro Ser Trp Glu Ile
      20                      25                      30

Thr Leu Ile Glu Arg Leu Glu Asp Val Ala Leu Glu Ser Ser Asn Ala
      35                      40                      45

Trp Asn Asn Ala Gly Thr Gly His Ser Ala Leu Cys Glu Leu Asn Tyr
      50                      55                      60

Ala Pro Leu Gly Ala Asn Gly Ile Ile Asp Pro Ala Arg Ala Leu Asn
      65                      70                      75                      80

Ile Ala Glu Gln Phe His Val Ser Arg Gln Phe Trp Ala Thr Leu Val
      85                      90                      95

Ala Glu Gly Lys Leu Glu Asp Asn Ser Phe Ile Asn Ala Val Pro His
      100                      105                      110

Met Ser Leu Val Met Asn Glu Asp His Cys Ser Tyr Leu Gln Lys Arg
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115					120					125					
Tyr	Asp	Ala	Phe	Lys	Thr	Gln	Lys	Leu	Phe	Glu	Asn	Met	Glu	Phe	Ser
130						135					140				
Thr	Asp	Arg	Asn	Lys	Ile	Ser	Asp	Trp	Ala	Pro	Leu	Met	Met	Arg	Gly
145						150					155				160
Arg	Asp	Glu	Asn	Gln	Pro	Val	Ala	Ala	Asn	Tyr	Ser	Ala	Glu	Gly	Thr
				165					170					175	
Asp	Val	Asp	Phe	Gly	Arg	Leu	Thr	Arg	Gln	Met	Val	Lys	Tyr	Leu	Gln
			180					185					190		
Gly	Lys	Gly	Val	Lys	Thr	Glu	Phe	Asn	Arg	His	Val	Glu	Asp	Ile	Lys
		195					200					205			
Arg	Glu	Ser	Asp	Gly	Ala	Trp	Val	Leu	Lys	Thr	Ala	Asp	Thr	Arg	Asn
	210					215					220				
Pro	Asp	Gly	Gln	Leu	Thr	Leu	Arg	Thr	Arg	Phe	Leu	Phe	Leu	Gly	Ala
	225					230					235				240
Gly	Gly	Gly	Ala	Leu	Thr	Leu	Leu	Gln	Lys	Ser	Gly	Ile	Pro	Glu	Gly
			245					250						255	
Lys	Gly	Tyr	Gly	Gly	Phe	Pro	Val	Ser	Gly	Leu	Phe	Phe	Arg	Asn	Ser
		260						265					270		
Asn	Pro	Glu	Thr	Ala	Glu	Gln	His	Asn	Ala	Lys	Val	Tyr	Gly	Gln	Ala
		275					280					285			
Ser	Val	Gly	Ala	Pro	Pro	Met	Ser	Val	Pro	His	Leu	Asp	Thr	Arg	Asn
	290					295					300				
Val	Asp	Gly	Lys	Arg	His	Leu	Met	Phe	Gly	Pro	Tyr	Ala	Gly	Phe	Arg
	305					310					315				320
Ser	Asn	Phe	Leu	Lys	Gln	Gly	Ser	Leu	Met	Asp	Leu	Pro	Leu	Ser	Ile
			325						330					335	
His	Met	Asp	Asn	Leu	Tyr	Pro	Met	Leu	Arg	Ala	Gly	Trp	Ala	Asn	Met
			340					345					350		
Pro	Leu	Thr	Lys	Tyr	Leu	Leu	Gly	Glu	Leu	Arg	Lys	Thr	Lys	Glu	Glu
		355					360					365			
Arg	Phe	Ala	Ser	Leu	Leu	Glu	Tyr	Tyr	Pro	Glu	Ala	Asn	Pro	Asp	Asp
	370					375					380				
Trp	Glu	Leu	Ile	Thr	Ala	Gly	Gln	Arg	Val	Gln	Ile	Ile	Lys	Lys	Asp
	385					390					395				400
Ser	Glu	Lys	Gly	Gly	Val	Leu	Gln	Phe	Gly	Thr	Glu	Ile	Val	Ala	His
			405						410					415	
Ala	Asp	Gly	Ser	Leu	Ala	Ala	Leu	Leu	Gly	Ala	Ser	Pro	Gly	Ala	Ser

420 425 430
 Thr Ala Val Pro Leu Met Ile Arg Leu Met His Gln Cys Phe Pro Glu
 435 440 445
 Arg Thr Pro Ser Trp Glu Gly Arg Leu Lys Glu Leu Val Pro Gly Tyr
 450 455 460
 Gly Ile Lys Leu Asn Glu Asn Pro Glu Arg Ala Asp Glu Ile Ile Ala
 465 470 475 480
 Tyr Thr Ala Lys Val Leu Asp Ile
 485

<210> 697
 <211> 753
 <212> DNA
 <213> Neisseria gonorrhoeae

<400> 697
 atggcggcgg cggaataaaa acgccccctc gctgtcgatt tccagcacat agcgctcggtt 60
 ctgcacggcg gcatagccgc ttttgccctgc ctgatagggt tgcagggcgg aatgcgaaat 120
 caggtaatca gtcagtttgc cgccgtcttc ggcgatattg cccaccagtt tggcaaacia 180
 ggtatggcac acgccgtttt ccgcccagcc cgaaggcgcg tcctttccgt cggtttccat 240
 acatttgccg acgacggctt ccaagtcgtt gggatgcttt ccggtcagcc ggacggcggt 300
 ttgttcggc aagcctttta tccgataact gatttgcttt ttgccgtcgt tggttttgcc 360
 ttgcgtactt tgtcccaaag ccaaaccggc aatcgccgta ttgtcgatgt atttgacttt 420
 gaaaaccggg ttcggcgcgcg tttgtgccgc attttgccgc ttttccgccc tattttcgga 480
 tttgccgcag gcggcaagca gcaggcagcc gcccaacacg gcaaaaggta ttttcagcat 540
 tccgcactcc tgatggtttc aaaatgccgt ctgaaatgcc gtctgaaacg tggcaggcgg 600

 aggttcggac ggcattgggt ttattttcaac gggcggatgc cgaccgcac gcgtacttta 660
 tccaacaatt cgcgcgcttc tttgcgcgct ttttgccgcg ctgcctgcaa aatctcttcg 720
 atttgcaag gattagaggt caatgcgttg tag 753

<210> 698
 <211> 250
 <212> PRT
 <213> Neisseria gonorrhoeae

<400> 698
 Met Ala Ala Ala Glu Ile Lys Arg Pro Leu Ala Val Asp Phe Gln His
 1 5 10 15
 Ile Ala Ser Val Leu His Gly Gly Ile Ala Ala Phe Ala Cys Leu Ile
 20 25 30
 Gly Leu Gln Gly Gly Met Arg Asn Gln Val Ile Ser Gln Phe Ala Ala
 35 40 45
 Val Phe Gly Asp Ile Ala His Gln Phe Gly Lys Gln Gly Met Ala His
 50 55 60
 Ala Val Phe Arg Pro Ala Arg Arg Arg Val Leu Ser Val Gly Phe His
 65 70 75 80

Thr Phe Ala Asp Asp Gly Phe Gln Val Val Gly Met Leu Ser Gly Gln
 85 90 95
 Pro Asp Gly Val Leu Phe Arg Gln Ala Phe Asn Arg Ile Thr Asp Leu
 100 105 110
 Phe Phe Ala Val Val Gly Phe Ala Phe Ala Thr Leu Ser Gln Ser Gln
 115 120 125
 Thr Gly Asn Arg Arg Ile Val Asp Val Phe Asp Phe Glu Asn Arg Phe
 130 135 140
 Arg Arg Ala Leu Cys Arg Ile Leu Arg Leu Phe Arg Arg Ile Phe Gly
 145 150 155 160
 Phe Ala Ala Gly Gly Lys Gln Gln Ala Ala Ala Gln His Gly Lys Arg
 165 170 175
 Tyr Phe Gln His Ser Ala Leu Leu Met Val Ser Lys Cys Arg Leu Lys
 180 185 190
 Cys Arg Leu Lys Arg Gly Arg Arg Arg Phe Gly Arg His Trp Val Tyr
 195 200 205
 Phe Asn Gly Arg Met Pro Thr Ala Ser Arg Thr Leu Ser Asn Asn Ser
 210 215 220
 Arg Ala Ser Leu Arg Ala Phe Cys Ala Pro Ala Cys Lys Ile Ser Ser
 225 230 235 240
 Ile Cys Glu Gly Leu Glu Val Asn Ala Leu
 245 250

<210> 699
 <211> 739
 <212> DNA
 <213> Neisseria meningitidis

<400> 699
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 ctgcacggcg gcatagccgc ttttgccctgc ctgatagggt tgcagggcgg catgcgaaac 120
 taggtaatcc gtcagtttgc cgccgtcttc ggcgatattg cccaccagtt tggcaaaciaa 180
 ggtatggcac acgccgtttt ctgcccaacc tgccggactg tccttatcat cggtttccat 240
 acatttgccg ctgacggcgtt ccaagtcgcc gggatgcttg ccgatcagtc ggataacatt 300
 ttgttccggc aagcctttta tcggataact gatttgtttt ttgccgtcgt tggttttgcc 360
 ttcgctgctt tgtcccaaatt ccaaaccggc aatcgccgta ttgtcgatat atatgacttt 420
 gaaaaccggt ttcggcgcgc tttgtaccgc gttttgcggc tgtaccgccg tatttwcgga 480
 tttgccgcac ggcaargcag caggcagccg cccaatacgg caaaarawgt wttcagcatt 540
 ccacaytctt gatggtttca aaatgccgtc tgaaacgcgg caggcggagg ttcggacggc 600
 atcgggttca tttcaacggg cggatgccga ccgcacgggt actttgtcca ataattcgcg 660
 tgcctcttta cgcgctttcg ccgcgcctgc ctgcaaaatc tcttcgattt gcgaagggtc 720
 ggcggtcagc tcgtttagtag 739

<210> 700

<211> 245
<212> PRT
<213> Neisseria meningitidis

<400> 700

Met	Ala	Ala	Ala	Glu	Ile	Lys	Arg	Pro	Phe	Ala	Val	Asp	Phe	Gln	His
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Ile	Ala	Ser	Val	Leu	His	Gly	Gly	Ile	Ala	Ala	Phe	Ala	Cys	Leu	Ile
			20					25					30		
Gly	Leu	Gln	Gly	Gly	Met	Arg	Asn	Val	Ile	Arg	Gln	Phe	Ala	Ala	Val
		35					40					45			
Phe	Gly	Asp	Ile	Ala	His	Gln	Phe	Gly	Lys	Gln	Gly	Met	Ala	His	Ala
	50					55					60				
Val	Phe	Cys	Pro	Thr	Cys	Arg	Thr	Val	Leu	Ile	Ile	Gly	Phe	His	Thr
	65				70					75					80
Phe	Ala	Ala	Asp	Gly	Phe	Gln	Val	Ala	Gly	Met	Leu	Ala	Asp	Gln	Ser
				85					90					95	
Asp	Asn	Ile	Leu	Phe	Arg	Gln	Ala	Phe	Asn	Arg	Ile	Thr	Asp	Leu	Phe
			100					105					110		
Phe	Ala	Val	Val	Gly	Phe	Ala	Phe	Ala	Ala	Leu	Ser	Gln	Ile	Gln	Thr
		115					120					125			
Gly	Asn	Arg	Arg	Ile	Val	Asp	Ile	Tyr	Asp	Phe	Glu	Asn	Arg	Phe	Arg
	130					135					140				
Arg	Ala	Leu	Tyr	Arg	Val	Leu	Arg	Leu	Tyr	Arg	Arg	Ile	Xaa	Gly	Phe
	145				150				155						160
Ala	Ala	Thr	Ala	Xaa	Gln	Gln	Ala	Ala	Ala	Gln	Tyr	Gly	Lys	Xaa	Xaa
				165				170						175	
Xaa	Gln	His	Ser	Thr	Xaa	Leu	Met	Val	Ser	Lys	Cys	Arg	Leu	Lys	Arg
			180					185					190		
Gly	Arg	Arg	Arg	Phe	Gly	Arg	His	Arg	Val	His	Phe	Asn	Gly	Arg	Met
	195						200					205			
Pro	Thr	Ala	Ser	Gly	Thr	Leu	Ser	Asn	Asn	Ser	Arg	Ala	Ser	Leu	Arg
	210					215					220				
Ala	Phe	Ala	Ala	Pro	Ala	Cys	Lys	Ile	Ser	Ser	Ile	Cys	Glu	Gly	Ser
	225				230					235					240
Ala	Val	Ser	Ser	Leu											
				245											

<210> 701
<211> 474

<212> DNA

<213> *Neisseria meningitidis*

<400> 701

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ctgcacggcg gcatagccgc ttttgcctgc ctgatagggt tgcagggcgg aatgcgaaat 120
caggtaatcc gtcagtttgc cgccgtcttc ggcgatattg cccaccagtt tggcaaacaa 180
ggtatggcac acgcccgtttg ccgcccagcc cgaaggcgcg ccctttccgt cggtttccat 240
acatttgccg acgacggcctt ccaagtcggt gggatgcttg ccggtcagcc ggacgacgtt 300
ttgttcgggc aagcctttaa gaggttcgga cggcattggg tttatttcaa cggcgcgata 360
ccgaccgcat cagctacttt gcccaataat tcgcgtgctt ctttacgcgc tttttgcgcg 420
cctgcctgca aaatctcttc gatttgcgaa gggtcggcgg tcagctcgtt gtag 474
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<210> 702

<211> 157

<212> PRT

<213> *Neisseria meningitidis*

<400> 702

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Met Ala Ala Ala Glu Ile Lys Arg Pro Leu Ala Val Asp Phe Gln His
  1             5             10             15

Ile Ala Ser Val Leu His Gly Gly Ile Ala Ala Phe Ala Cys Leu Ile
      20             25             30

Gly Leu Gln Gly Gly Met Arg Asn Gln Val Ile Arg Gln Phe Ala Ala
      35             40             45

Val Phe Gly Asp Ile Ala His Gln Phe Gly Lys Gln Gly Met Ala His
      50             55             60

Ala Val Cys Arg Pro Ala Arg Arg Arg Ala Leu Ser Val Gly Phe His
      65             70             75             80

Thr Phe Ala Asp Asp Gly Phe Gln Val Val Gly Met Leu Ala Gly Gln
      85             90             95

Pro Asp Asp Val Leu Phe Arg Gln Ala Phe Lys Arg Phe Gly Arg His
      100            105            110

Trp Val Tyr Phe Asn Gly Arg Ile Pro Thr Ala Ser Arg Thr Leu Pro
      115            120            125

Asn Asn Ser Arg Ala Ser Leu Arg Ala Phe Cys Ala Pro Ala Cys Lys
      130            135            140

Ile Ser Ser Ile Cys Glu Gly Ser Ala Val Ser Ser Leu
      145            150            155
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<210> 703

<211> 546

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 703

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atgctgaaaa taccttttgc cgtgttgggc ggctgcctgc tgcttgccgc ctgcggcaaa 60
tccgaaaata cggcggaaca gccgcaaaat gcggcacaaa gcgcgccgaa accggttttc 120
aaagtcaaat acatcgacaa tacggcgatt gccggtttgg ctttgggaca aagtagcgaa 180
ggcaaaacca acgacggcaa aaaacaaatc agttatccga ttaaaggctt gccggaacaa 240
aacgccgtcc ggctgaccgg aaagcatccc aacgacttgg aagccgtcgt cggcaaattgt 300
atggaaaccg acggaagga cgcgccttcg ggctggggcg aaaacggcgt gtgccatacc 360
ttgtttgcca aactggtggg caatatcgcc gaagacggcg gcaaactgac tgattacctg 420
atttcgcatt ccgccctgca accctatcag gcaggcaaaa gcggctatgc cggcgtgcag 480
aacggacgct atgtgctgga aatcgacagc gagggggcgt tttatttccg ccgccgccat 540
tattga
546

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<210> 704
 <211> 181
 <212> PRT
 <213> Neisseria gonorrhoeae

<400> 704
 Met Leu Lys Ile Pro Phe Ala Val Leu Gly Gly Cys Leu Leu Leu Ala
 1 5 10 15
 Ala Cys Gly Lys Ser Glu Asn Thr Ala Glu Gln Pro Gln Asn Ala Ala
 20 25 30
 Gln Ser Ala Pro Lys Pro Val Phe Lys Val Lys Tyr Ile Asp Asn Thr
 35 40 45
 Ala Ile Ala Gly Leu Ala Leu Gly Gln Ser Ser Glu Gly Lys Thr Asn
 50 55 60
 Asp Gly Lys Lys Gln Ile Ser Tyr Pro Ile Lys Gly Leu Pro Glu Gln
 65 70 75 80
 Asn Ala Val Arg Leu Thr Gly Lys His Pro Asn Asp Leu Glu Ala Val
 85 90 95
 Val Gly Lys Cys Met Glu Thr Asp Gly Lys Asp Ala Pro Ser Gly Trp
 100 105 110
 Ala Glu Asn Gly Val Cys His Thr Leu Phe Ala Lys Leu Val Gly Asn
 115 120 125
 Ile Ala Glu Asp Gly Gly Lys Leu Thr Asp Tyr Leu Ile Ser His Ser
 130 135 140
 Ala Leu Gln Pro Tyr Gln Ala Gly Lys Ser Gly Tyr Ala Ala Val Gln
 145 150 155 160
 Asn Gly Arg Tyr Val Leu Glu Ile Asp Ser Glu Gly Ala Phe Tyr Phe
 165 170 175
 Arg Arg Arg His Tyr
 180

<210> 705

<211> 545
 <212> DNA
 <213> Neisseria meningitidis

<400> 705
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 ccgwaaatac ggcggtacag ccgcaaaacg cggtagaaag cgcgccgaaa ccggtttttca 120
 aagtcataata tatcgacaat acggcgattg cgggttttga tttgggaGaa agcagcgaaag 180
 gcaaaaccaa cgacgggcaaa aaacaaatca gttatccgat taaaggcttg ccggaacaaa 240
 atgttatccg actgatcggc aagcatcccg gcgacttgga agccgtcagc ggcaaattga 300
 tggaaaccga tgataaggac agtccggcag gttgggcaga aaacggcgtg tgccataacct 360
 tgtttgccaa actgggtggc aatatcgccg aagacggcgg caaactgacg gattacctag 420
 tttcgcatgc cgccttgcaa ccctatcagg caggcaaaag cggctatgcc gccgtgcaga 480
 acggacgcta tgtgctggaa atcgacagcg aaggggcgtt ttatttcgcg cgcgcgcatt 540
 attga 545

<210> 706
 <211> 181
 <212> PRT
 <213> Neisseria meningitidis

<400> 706
 Met Leu Xaa Thr Xaa Phe Ala Val Leu Gly Gly Cys Leu Leu Xaa Cys
 1 5 10 15
 Arg Cys Gly Lys Ser Xaa Asn Thr Ala Val Gln Pro Gln Asn Ala Val
 20 25 30
 Gln Ser Ala Pro Lys Pro Val Phe Lys Val Ile Tyr Ile Asp Asn Thr
 35 40 45
 Ala Ile Ala Gly Leu Asp Leu Gly Gln Ser Ser Glu Gly Lys Thr Asn
 50 55 60
 Asp Gly Lys Lys Gln Ile Ser Tyr Pro Ile Lys Gly Leu Pro Glu Gln
 65 70 75 80
 Asn Val Ile Arg Leu Ile Gly Lys His Pro Gly Asp Leu Glu Ala Val
 85 90 95
 Ser Gly Lys Cys Met Glu Thr Asp Asp Lys Asp Ser Pro Ala Gly Trp
 100 105 110
 Ala Glu Asn Gly Val Cys His Thr Leu Phe Ala Lys Leu Val Gly Asn
 115 120 125
 Ile Ala Glu Asp Gly Gly Lys Leu Thr Asp Tyr Leu Val Ser His Ala
 130 135 140
 Ala Leu Gln Pro Tyr Gln Ala Gly Lys Ser Gly Tyr Ala Ala Val Gln
 145 150 155 160
 Asn Gly Arg Tyr Val Leu Glu Ile Asp Ser Glu Gly Ala Phe Tyr Phe
 165 170 175
 Arg Arg Arg His Tyr

<210> 707
 <211> 336
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 707
 tccgaacctc ttaaaggctt gccggaacaa aacgtcgtcc ggctgaccgg caagcatccc 60
 aacgacttgg aagccgtcgt cggcaaatgt atggaaaccg acggaaaggg cgcgccttcg 120
 ggctgggagg caaacggcgt gtgccatacc ttgtttgcca aactgggtgg caatatcgcc 180
 gaagacggcg gcaaactgac ggattacctg atttcgcatt ccgccctgca accctatcag 240
 gcaggcaaaa gcggctatgc cggcgtgcag aacggacgct atgtgctgga aatcgacagc 300
 gagggggcgt tttatttccg ccgccgccat tattga 336

<210> 708
 <211> 111
 <212> PRT
 <213> *Neisseria meningitidis*

<400> 708
 Ser Glu Pro Leu Lys Gly Leu Pro Glu Gln Asn Val Val Arg Leu Thr
 1 5 10 15
 Gly Lys His Pro Asn Asp Leu Glu Ala Val Val Gly Lys Cys Met Glu
 20 25 30
 Thr Asp Gly Lys Gly Ala Pro Ser Gly Trp Ala Ala Asn Gly Val Cys
 35 40 45
 His Thr Leu Phe Ala Lys Leu Val Gly Asn Ile Ala Glu Asp Gly Gly
 50 55 60
 Lys Leu Thr Asp Tyr Leu Ile Ser His Ser Ala Leu Gln Pro Tyr Gln
 65 70 75 80
 Ala Gly Lys Ser Gly Tyr Ala Ala Val Gln Asn Gly Arg Tyr Val Leu
 85 90 95
 Glu Ile Asp Ser Glu Gly Ala Phe Tyr Phe Arg Arg Arg His Tyr
 100 105 110

<210> 709
 <211> 524
 <212> DNA
 <213> *Neisseria gonorrhoeae*

<400> 709
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 tccgaaaata cggcgggaaca gccgcaaaat gcggcacaaa gcgcgccgaa accgggttttc 120
 aaagtcaaat acatcgacaa tacggcgatt gccggtttgg ctttgggaca aagtagcgaa 180
 ggcaaaacca acgacggcaa aaaacaaatc agttatccga ttaaaggctt gccggaacaa 240
 aacgccgtcc ggctgaccgg aaagcatccc aacgacttgg aagccgtcgt cggcaaatgt 300
 atggaaaccg acggaaagga cgcgccttcg ggctgggagg aaaacggcgt gtgccatacc 360

ttgtttgcc aactggtggg caatatcgcc gaagacggcg gcaaactgac tgattacctg 420
 atttcgatt ccgccctgca accctatcag gcaggcaaaa gcggctatgc cgccgtgcag 480
 aacggacgct atgtgctgga aatcgacagc gagggggcgt tttt 524

<210> 710
 <211> 174
 <212> PRT
 <213> *Neisseria gonorrhoeae*

<400> 710
 Met Leu Lys Ile Pro Phe Ala Val Leu Gly Gly Cys Leu Leu Leu Ala
 1 5 10 15
 Ala Cys Gly Lys Ser Glu Asn Thr Ala Glu Gln Pro Gln Asn Ala Ala
 20 25 30
 Gln Ser Ala Pro Lys Pro Val Phe Lys Val Lys Tyr Ile Asp Asn Thr
 35 40 45
 Ala Ile Ala Gly Leu Ala Leu Gly Gln Ser Ser Glu Gly Lys Thr Asn
 50 55 60
 Asp Gly Lys Lys Gln Ile Ser Tyr Pro Ile Lys Gly Leu Pro Glu Gln
 65 70 75 80
 Asn Ala Val Arg Leu Thr Gly Lys His Pro Asn Asp Leu Glu Ala Val
 85 90 95
 Val Gly Lys Cys Met Glu Thr Asp Gly Lys Asp Ala Pro Ser Gly Trp
 100 105 110
 Ala Glu Asn Gly Val Cys His Thr Leu Phe Ala Lys Leu Val Gly Asn
 115 120 125
 Ile Ala Glu Asp Gly Gly Lys Leu Thr Asp Tyr Leu Ile Ser His Ser
 130 135 140
 Ala Leu Gln Pro Tyr Gln Ala Gly Lys Ser Gly Tyr Ala Ala Val Gln
 145 150 155 160
 Asn Gly Arg Tyr Val Leu Glu Ile Asp Ser Glu Gly Ala Phe
 165 170

<210> 711
 <211> 546
 <212> DNA
 <213> *Neisseria meningitidis*

<400> 711
 atgctgaaaa catcttttgc cgtattgggc ggctgcctgc tgcttgccgc ctgcggcaaa 60
 tccgaaaata cggcggaaca gccgcaaaac gcggtacaaa gcgcgccgaa accggttttc 120
 aaagtcaa ataatcgacaa tacggcgatt gccggtttgg atttgggaca aagcagcgaa 180
 ggcaaaacca acgacggcaa aaaacaaatc agttatccga ttaaaggctt gccggaacaa 240
 aatgttatcc gactgatcgg caagcatccc ggcgacttgg aagccgtcag cggcaaatgt 300
 atggaaaccg atgataagga cagtccggca ggttgggcag aaaacggcgt gtgccatacc 360